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ABSTRACT

This report, a series of three background papers, was prepared as part of the Thailand Secondary Vocational Education Sector Study. The first background paper, "Intro Changing Workplaces, Changing Skills: Views from the Thai Private Sector on Work-Organization, Employee Recruitment and Selection" (Charles Abelmann, Lee Kian Chang, Pinchuda Tinakorn Na Ayudhaya), looks beyond schooling to where graduates actually go to work by examining how 20 establishments actually recruit and select workers in this increasingly global economy. To better understand private sector views on the issue of skills for competitiveness, the background paper is based on in-depth case studies of a variety of different workplaces. The second background paper, "Private Vocational Education in Thailand" (Richard Johanson, Werawat Wanasiri), reviews private vocational education and training in Thailand. Part 1 describes the system and its various components. Part 2 evaluates the system in terms of relevance, quality, and efficiency and identifies strengths and weaknesses. Part 3 looks at implications of the New Education Law (1999) on private vocational education. Part 4 discusses four policy challenges and offers some policy options for the future. The third background paper, "Changing Returns to Education in Times of Prosperity and Crisis: Private Vocation Education in Thailand" (Joshua D. Hawley), uses data from Thailand's National Labor Force Surveys to show that the educational composition of the labor force changed significantly between 1985 and 1998. Each paper contains data, notes, and references. (BT)

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THAILAND

SECONDARY EDUCATION FOR EMPLOYMENT

Volume II: Background Papers

East Asia and Pacific Region
The World Bank

SO 033 434

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INTRO CHANGING WORKPLACES, CHANGING SKILLS: VIEWS FROM THE THAI PRIVATE SECTOR ON WORK-ORGANIZATION, EMPLOYEE RECRUITMENT AND SELECTION

Charles Abelbann, Lee Kian Chang and Pinchuda Tinakorn Na Ayudhaya

I. INTRODUCTION

This paper was prepared as a part of the Thailand Secondary Vocational Education Sector Study. One of the critical questions Thailand faces is to determine how to expand secondary education. While the new education law calls for universalizing secondary education, it leaves open the question of whether students should enroll in general secondary programs or more vocational programs and the more important question of what it is that students should know and be able to do as a result of their schooling. Traditionally, the balance between the two has been about fifty-fifty but the pending expansion leaves open the question of what the balance in the future should and will be. In addition, there are critical question to address regarding the curriculum and pedagogy used as a part of secondary education and the role the private sector will play in the provision of education.

This background paper looks beyond schooling to where graduates actually go to work by examining how 20 establishments actually recruit and select workers in this increasingly global economy. The paper is based on in-depth case studies of a variety of different workplaces to better understand the views of the private sector on the issue of skills for competitiveness. While recent work demonstrates that private employers invest heavily in worker training in Thailand, we know little about the nature of the training and know even less about how workers find their jobs and how employers go about selecting workers. While large surveys of industry provide information on how many "skilled" and "unskilled" production workers there are, we know little by what is meant by "skilled" and "unskilled." One firm's skilled worker can be another firm's unskilled worker. Thus, this work attempts to understand how establishments responding to global competition deal with questions related to work and skill by looking at how workers are recruited and selected. Numerous questions were asked to all establishments about the skills and attributes they value and how they differ by job level within the firm. We also try to understand the work practices and how they might have implications for the skills workers need.

METHODOLOGY

The sample of establishments included in this study was partly identified using data from the Thai Industrial and Competitiveness Survey (TICS) of manufacturing establishments conducted between October 1997 and 1998. TICS was designed to look at the extent of the impact of the crisis on firms and to understand their constraints to recovery. The survey was also designed to look at determinants of productivity and longer run issues of structural impediments to growth. The establishments surveyed came from five sectors including food, textiles, garments, electronics, and auto parts.

We decided to focus on learning more about establishment that employ, what in the industrial studies field have been called, high performing work practices. While the region is often thought of has a haven for low skill, low wage jobs, we wanted to understand more about

skill needs in those workplaces characterized by high performing work practices. For the purpose of this study, a firm is considered a high performing workplace if it is ISO certified or it can clearly articulate the process by which it selects workers using a formal instrument (test), and continues to invest in worker development through formal training (in-house and outside); or it has a structured quality program and continues to invest in worker development through formal training (in-house and outside). While not all the firms studied met this standard, we did deliberately chose to study firms with these practices as we expect that global pressure will require others to slowly emulate many of these practices.

In order to construct a sample which would include firms with high performing workplace practices, we used the data from TICS to identify firms that used ISO 9000, had higher percentages of machinery less than 4 years old, and also demonstrated a commitment to training unskilled workers as well as providing in house training. We also wanted to construct a sample that would include both locally owned establishments as well as multinationals. We also wanted the sample to include firms from a diverse set of sectors as well as that varied in size. Our goal was not to construct a representative sample but rather try to identify establishments that varied by size, ownership, and sector but shared some common characteristics related to those qualities often associated with high performing workplaces. In order to also have some understanding of establishment without some of these practices, we included a few firms that did not share any of these characteristics to see whether and how responses would differ. We also included some establishments from sectors not included in TICS as we wanted to include the experience of some service sector establishments such as Banks, Publishers and Shipping Companies. Like in many countries in the region, the service sector is growing at a faster rate than manufacturing and will be the source for much of employment growth.

We developed a new instrument which was piloted in four firms and then revised accordingly. The pilot firms represented different sectors, different sizes and different types of ownership. The four pilots also provided a basis for the training of field researchers to conduct the subsequent cases. The field guide instrument was designed to include both open ended questions with follow-up probes as well a number of more structured questions that required the respondent to rank their response to certain questions using a likert scale ranging from a response of 1, not important, to a response of 5, very important. There were also a number of simple "yes no" questions. Interviews were held with the general manager, a supervisor, the director of human resources, and the training manager at each establishment. In smaller firms, often the general manager and a supervisor would respond to all questions as there was no formal head of human resources or training.

In each establishment, three non managerial workers were also interviewed. In most cases, we tried to interview recently hired workers with less than a BA degree as the focus on the work is on non managerial workers. In some firms, we ended up interviewing workers with much more experience than initially intended in part because of either low turnover in firms or because of a lack of hiring during the fiscal crisis. These interviews focused on the same themes as discussed with management but all from the worker perspective. The interviews asked about both previous schooling and work experience as well as how the worker came to work in the current position. Workers were asked about how they were selected and what training they had received. Workers were also asked to respond to both open-ended and more structured questions about skills that are important for the work they do. In many cases, the interviews took place

within the normal work space of the worker. In all cases, we wanted to actually understand what the worker is required to do and if the interview took place in a meeting room, the workspace was later visited. A research team made up of two or three researchers spent at least one full day at each firm. In few cases, a second visit was made. In addition to conducting face to face interviews, company documents related to recruitment, selection, training and evaluation were also reviewed. For example, when firms mentioned the use of a test to select workers, the test items were either reviewed on site or a copy of the test collected. Most all interviews were taped.

For each establishment, a full narrative case study was developed and is available. One member of the research team took primary responsibility for the first draft and revisions were based upon the input from other team members. Questions which were quantitative in nature were all coded and entered into SPSS for statistical analysis across the cases. The cases were also coded for key themes of interest. Descriptive statistics were run looking at differences across firms size, ownership, sector and whether the establishments were high performing or not. This paper draws on the individual case studies as well as the descriptive data from the overall sample. The first section of the paper discusses how and why firms are changing and the implication of these changes for worker skills. The second section discusses the nature of how work is organized and the implication of work practices for skills. The section also reports on the skills managers say are important. The third section builds on employers views on what skills are important by looking at views on skills through the perspective of how workers are recruited and selected.

II. Changes in Workplaces

A. Increment of Skills Required

In this section, we examine whether and if the skills needed across the sample of establishments are changing. We discuss the reasons for change and what skills are expressed as being important as a result of these changes. Almost regardless of the sector or size of the establishment, skill requirements are increasing and firms are having to respond to new demands. Most of the surveyed establishments (90 percent) indicated that the skill requirement increased over the last two years. Some explained these changes as the result of higher quality standards set by customers (72 percent), changes in how work is organized (56 percent), as well as the application of new technology or the use of automation (50 percent). Over 65 percent of establishments were making use of some type of quality program in order to increase quality while 30 percent had recently acquired new machines and technology to increase their productivity. High performing establishments were more likely to report technology as reason for skill changes (64 percent) than the low performing establishments (29 percent).

Many of the establishments explained these changes as a response to the pressure of global competition. For example, one large auto part supplier explained, "As for the future, with the government policy to liberalize the import of auto parts, there will be fewer auto part manufacturers but an increasing number of automobile assembling factories. The car manufacturers will have more choices both domestically and abroad to select auto parts, thus staffs must be able to adapt, accept, be ready to learn new things and be more aware of product quality as a result of rise in competition."

Respondents expressed different views as whether new technology demanded more from workers. While 40 percent of the surveyed establishments commented that workers' jobs were not greatly changed as the result of technology, the majority of respondents felt that workers needed to acquire new skills and increase their understanding of computers and English to operate the new machines. As one manager in a dairy related industry said, "At present, automation is involved in every activity. Workers should at least have basic knowledge in mathematics because automation involves the use of numbers. Computer skill will be very important as manufacturing process is computerized." Workers in the garment industries surveyed have had to learn to use automated sewing machine. Similar adjustment and change occurred in many of the industries visited. In order to use new machines or technology, workers in the manufacturing industries, especially the electronics, auto-related, garment, food processing and plastic industries, need to have the ability to learn the new machine/technology. In the banking, insurance and shipping service industries, workers need to have English, computer and analytical skills. The manager in the shipping company explained, "Before now it was all in hardcopy now they work with computers. Workers now have to know how to use computer-associated machine/equipment. It is not just to do with advance office equipment, computer and internet, but it is also related to speed of getting information and reduce the cost of communication.." In the banking industry, as the working process becomes more computerized, employees need to pay more attention to banking product and analysis. As a manager explained, "workers are expected to know more and be able to do more." She further stated, "We required more skills because we have new products, we require them to expand their product knowledge for launching product. On the other hand, now we have more software for fund transfer, settlement, clearing system. We have to learn new programs. By using new software, there is no longer more procedures but more investigation and analysis are required. Staffs have more time for analysis."

B. Skills Required in Future

In addition to the increase of skills required during the last two years, 95 percent of respondents foresee that there will be greater skills needed in the future. Many respondents expressed the view that there will only be more new technology and automated machinery. In order to stay competitive, respondents expressed the following skills as being important for workers in the future:

- Occupational/ job/technical skills (37 percent)
- Computer skills (37 percent)
- Ability to learn new occupation/machine (21 percent)
- English (21 percent)
- Attitudes (21 percent)
- People skills (21 percent)
- Communication (10 percent)

Across all of the industries, occupational and computer skills emerge to be the important for future employees, but in the banking, insurance, electronic and food processing respondents also stressed the growing importance of English skills. One manager in a plastics plant discussed how, "Skills in future should be higher. Now workers only memorize the machine control panel

button. In fact they do not know the meaning that is written in English." Knowing English will be critical to operate a machine to its full capacity. One of the managers at a major Bank also stressed the importance of English and computers saying, "The new recruits should possess skill in using computers as work is growing more and more computerized. They should also possess skill in using English as they are likely to have more interaction with foreigners." A manager in a printing company expressed similar views, "For the staff's working skills in the future, the company would like them to have more computer knowledge. They cannot only use computers but should also solve some computer problems. They should be more creative; they should know their working weak points, find working short cuts and dare to think and present their ideas."

C. Skills & Qualifications in Short Supply

Currently, two-thirds (75 percent) of surveyed establishments, especially those foreign, large and high performing firms, found difficulty in recruiting workers with qualifications and skills they desired. More than half (60 percent) of surveyed companies mentioned that employees with a Bachelor degree are in short supply while a minority of respondents felt a lack of sufficient graduates either from high vocational school (20 percent) or junior vocational school (13 percent). Specific skills in short supply included occupational/technical skills (47 percent), computer skills (20 percent) and workers with adequate English skills (13 percent). The responses and comments from managers suggest that while technical skills are valued, employers do not expect graduates of vocational programs to have the skills they need. In fact employers show little preference for graduates of vocational programs and almost assume that they will have to train their own skilled labor. (see section on recruitment and education level)

For more selective higher level technical positions, many expressed a shortage. As one manager in a household plastic goods firm expressed, "Technicians and Engineers are in short supply, especially Electrical and Mechanical Engineers. We need engineers who have knowledge and skills in electrical and mechanical of machines." Another manager in a firm that makes boxer shorts would like to have certain staff but they are currently unavailable as he explained, "We need [an] industry engineer who can manage time motion study, calculate the production timing." As another manager at a dairy firm commented, "Competent technical skill people, mechanical and electrical people are difficult to find. We have many equipment need to be taken care. To me, the level of local vocational school is below basic.

Overall across the sample firms, whether small or large, locally owned or multinational, face the pressures of the global economy. Skill needs have changed and are expected to increase. While most employers are willing to train and expect to have to train workers, they want workers who are willing and able to learn. In some cases, new workers will have to have adequate English and computer skills and many firms would like to be able to hire higher level workers who have the adequate higher level technical positions to be technicians. However, firms do not express any frustration with the technical skill levels of entry level workers as technical skills are rarely expected of entry level workers.

III. Workplace Practices and Skills Desired

Another area the surveys covered was to examine workplace practices that might be associated with different skill requirements. We wanted to know more about how work was organized and work practices that might have implications for what is required of workers. Thus, we asked questions about how each establishment assures quality and whether they were certified by any external body such as The International Organization for Standardization (ISO). We were also interested in learning whether workers are expected to learn multiple jobs, whether workers are organized in formal teams, and whether and how workers are evaluated. We also wanted to learn whether and how management involves workers in suggesting changes in work practice. We also asked a number of questions about how management evaluates workers. In addition to looking at these work practices, we also asked a number of questions directly about the skills used by workers in their current jobs and the education level of the current workforce.

A. QUALITY

One of the differences between high performing and low performing firms is how they address quality issues. The low performing, small and medium firms highly rely on visual inspection and customer feedback to assure quality on products or services, while in contrast, high performing, large and foreign firms greatly use precision instruments and customer feedback to assure their product or service quality. For example, 77 percent of high performing firms use precision instruments to gage quality whereas only 57 percent of low performing firms use similar instruments. As compared to small and low performing firms, there is a higher percentage of large, high performing firms that benchmark or compare their practices and performance with other organizations. The larger firms as well as the high performing firms are more likely to report having had access to and using technical assistance in areas such as technology transfer and quality assistance. Overall the larger firms and the high performing firms have more formal operations using systematic procedures while the low performing firms are much more informal.

B. QUALITY STANDARDS

One consequence of the global market and demand for quality is the growth in internationally recognized standards. The International Organization for Standardization (ISO) is a worldwide federation of national standard bodies established in 1947. ISO has established standards related to quality systems refereed to as the ISO 9000 standards. 40 percent of the firms in the sample were granted with ISO certification (either ISO 9000, 9002 or 14000). Three of the companies were from the electronics sector; two from auto- related industry while the rest were from food processing, shipping and furniture industry respectively. Some of the firms were small while others were large. ISO is an excellent proxy for firms that involve front line workers in quality programs that demand knowledge of precise methods to gauge quality. The rising interest and knowledge about ISO reflects the increasing demand to assure quality for export markets. Many clients will only deal with firms that are ISO registered. One manager of an electronics firm that makes controls for air conditioners expressed the need for ISO by saying, "Our company is having more foreign clients who are demanding standard quality product. Thus, the company needed to join ISO in order to protect an image and ensure foreign clients the reliability of our product." The Managing Director of a shipping company commented, "ISO becomes the lowest common denominator; everybody is going to have that. To be a company today, basically you have to reach a certain level of efficiency that can be measured."

Across the sample, management and workers alike knew about ISO. In one knitting factory that does not have ISO but wants ISO a worker commented, "Quality is emphasized every morning which is much stricter than it used to be. It is mentioned until we are so used to it now. The company reminds us every morning that ISO is coming and all staff must adapt and could not stick to old methods...I get so stressed with ISO that I want to quit because work is very detailed; for example, slight mistake in button sewing used to be acceptable but now the supervisor will measure it and a slight mistake means redo."

Those companies who received ISO certification mentioned that the main reasons to have ISO are product quality/reliability (25 percent) and to assure a systematic work process (15 percent). They realized the benefits that ISO could bring in internal improvements and in increasing sales and marketing opportunity. A manager from a producer of transformers captured the importance of ISO both on internal productivity and the external image stating, "First we want to improve our production process. Second, product with ISO certificate will be more reliable and we believe it can increase our sales opportunity in the overseas market. Third, the government sector will only ask those companies with ISO to bid government projects."

Apart from ISO certification, there are many kinds of quality certification that were relevant to the firms studied. In the case of the food industry, all three plants had successfully implemented HACCP (Hazard Analysis and Critical Control Point System), an important certificate for the Food industry. However, as one manager commented, "Although we have received HACCP certificate, this certificate is not well-known. ISO is well reputed. Products that are granted ISO easily gain respect from consumers."

An additional three firms expressed an interest and desire for ISO but spoke of the financial challenge of obtaining it. A manager from one of the textile firms was deeply committed to achieving ISO. As he expressed, "We must achieve ISO because foreign clients will feel[we are] more reliable. At present , we are above ISO standard for some matters but have no meter for measuring. With ISO , we will have a better measuring standard." Another auto parts firms has wanted to achieve ISO but has not had success. The management believes it must have ISO to increase its competitive advantage in foreign markets, especially the United States. The manager continued to discuss the importance of quality saying, "products must not be defected at all, no blemish is allowed."

As firms introduce changes in work organization that involve ISO, the daily work and skill requirements of workers can and do often change. One auto part firm discussed that ISO could not be introduced without training that increased the skills of workers. A manager from a kitchen plastic goods company discussed how he "would like to implement [ISO] in the factory but I think our workers are not up to the level and they should have higher education and knowledge about what ISO is and the goal of ISO." The ISO standards are in the process of being revised and the new version will give greater emphasis to continuous improvement and not simply standardization of practice which will likely require more from all workers.

None of the low performing companies received ISO certification while 62 percent of the high performing firms operated with ISO. There were 12 companies who do not have ISO. Most of them were local Thai companies without a large export base. As one manager of a small

family owned electronic firm stated, "ISO is good to have but we are not an export company and ISO seems to be mainly for those export good manufactures." Often the managers commented that local clients are not concerned with ISO. Other reasons for not having ISO include a sense from management of not being ready as well as the difficult process and high cost associated with the application for ISO. Some felt they needed to improve their management and working system before they could think about getting ISO. In the case of one of the garment industries, the manager responded that while they do not have ISO his customers do check and monitor his operation closely – "Every standard like labor, health and hygiene and skill of work and production is being inspected in detail by brand owners. There are frequent random checks, very thorough and tedious inspections." While ISO is available for service sector firms, it traditionally is more relevant to manufacturing enterprises. Thus while the service sector firms often had workplace practices associated with high performing organizations, they did not use ISO.

C. Employee Performance Evaluation

Another proxy we used for what matters to employers was to examine whether employers evaluated workers and if they did what criteria were used. Most all of the firms have some form of an employee performance evaluation generally conducted either on a yearly or quarterly basis for the purpose of informing salary adjustments. In the small family owned firms, evaluation is more of an informal exercise not requiring any paperwork. For example, in a small injection mold plant that makes products like plastic fans, the manager explained we have never had any "formal staff evaluation or forms but do call staff in to discuss general work, see how concentrated they are in work, how good is their behavior, how much they have improved their skills, any frequent lateness or absenteeism, any problems with colleagues. The individual's salary increment will be based on the individual's ability to learn the work fast, work efficiency and improvement of personal skills." Many companies do use more formal evaluation forms with different forms for different levels of employee. In general, the content of the assessment whether formal or informal focuses on the attributes of quality (90 percent), quantity of work (70 percent), compliance to rules & regulations (70 percent), attendance rate (60 percent), human relationships and teamwork (60 percent), cooperation (45 percent), job knowledge and understanding of work (40 percent), and ability to learn new things (35 percent).

According to the worker surveys, 43 percent of the workers felt that they were evaluated based upon attendance rate and punctuality. In addition many of the workers thought that they were evaluated on the quality of their job (30 percent) and quantity of work (25 percent). Most workers were not exactly clear on what they were evaluated upon. However, workers in the larger firms or the firms that were high performing had a clearer idea of how they were evaluated which aligned with what management said about the evaluation system. For example, in one of the largest Thai Banks evaluation is done twice a year and is linked both to a potential bonus as well as salary increases. As the manager explained, "Supervisors are in charge of evaluation, taking achievement, determination, co-operation and absence into account. When evaluation is done, supervisors must notify employees about evaluation. And when workers are notified, they sign their names on the evaluation form." Service sector firms and high performing firms were more likely to include items such as creativity, problem solving and team work as a part of the formal evaluation exercise.

D. Employee Suggestion Programs and Satisfaction Surveys

We were interested to learn about whether and how workers are expected to contribute to improvemens in operations and thus asked questions about worker suggestion programs and surveys of worker views. The majority of the firms (75 percent) operated some type of worker suggestion program. The programs, however, tend to be fairly informal and not part of a culture where workers are looked to make significant contributions. Usually a company has a suggestion box or will as part of regular meetings ask for suggestions.

Only three of the firms have ever conducted employee satisfaction surveys and all of them are large and high performing companies. The firms included one of the large banks, and insurance company and a multi national electronics firm. One high performing auto plant expects all workers to make regular suggestion and expects workers "to think all the time about what can be improved." Suggestions are scored by supervisors and will affect the evaluation of each worker.

E. Job Rotation

We were also interested to learn whether firms expect workers to learn multiple jobs or simply master one narrowly defined job. Such job rotation is important as where it exists workers are expected to be more flexible and continue to always learn new job functions. All surveyed companies indicated that they have job rotation for their employees. However, 65 percent of the firms admitted that only less than 10 percent of their employees are involved in job rotation. Only four firms, one electronic, one auto, one food processing and one plastics firm, have 40 percent or more of their workers involved in job rotation. Many respondents had a hard time understanding what was meant by the question. Often the respondent interpreted the term to mean shift work or job promotion. In small family owned businesses often job rotation is a necessity as there are so few workers.

Some managers were clear that they did not want any job rotation but rather wanted to assure workers stay narrowly focused. For example, a manager in a low performing textile firms commented, "Job rotation will not be done as that will create confusion for the workers." In other cases, managers viewed job rotation as a critical part of assuring workers have multiple skills. In fact in some cases it is the workers who can master multiple jobs that are promoted. In one food processing firm, the only way to be promoted is to master multiple jobs. During the economic crisis, a few of the high performing auto firms used the opportunity to train workers in multiple jobs. One firm hopes that all workers will learn to work with every kind of machine. This strategy allows greater flexibility is shifting to different product lines. For the respondents who understood the idea of job rotation, they expressed it helps workers understand their job better and the relationship of their work to the work of others. In the service sector firms that have workers with much higher level of education, there is also a sense that workers should be able to understand the job of others and fill in when and if necessary. At one Bank, "workers are always rotated to do the jobs within the department so that they can replace their colleagues who are absent from work."

F. Work Teams

We were also interested to see if firms reported using work teams to gauge the importance of team work in the workplace. All surveyed firms have non-managerial and non-supervisory employees involved in work teams. The degree to which work teams are in place appeared as polarized. 40 percent of firms have less than 10 percent of employees involved in work teams while the other 40 percent of firms have more than 50 percent of employees working as a team. The concept of work team was not easy to convey in questions and was often interpreted to mean different things. Some thought that any shift made up a work team and others thought that any production line made up a team. The Thai culture is considered to be very cooperative and collegial and thus in some cases it was assumed that any work would be a team effort. A manager at a textile firm commented, "Each production line is a team ... employees are involved in team work for the purpose of problem solving and enhancing quality services." Across all firms, 90 percent of the workers interviewed felt their employers valued team work. The high performing firms were more likely to link team work to a deliberate activity to engage workers in the work process and contribute to improvement in that process. For example, one high performing auto plant uses quality circles and offers courses in suggestion writing.

G. Use of Computers

The final work practice we examined related to the use of computers and computer numerically controlled machines. All surveyed companies indicated that their employees need to use computers or computer numerically controlled machines (CNC). 55 percent of the firms have less than 10 percent of employees using a computer or CNC while the other 35 percent of firms have more than 50 percent of employees using computer or CNC.

Most of the manufacturing companies have a low percentage of total employees who are involved in working with computers, but quite many of their line workers need to know how to use a computerized machine or automated machine. In the manufacturing firms there are often back offices where some workers need to have basic computer skills. The banking, insurance and shipping service firms are the exceptions as a majority of their employees need to use computers for their job.

H. Skills Needed to Perform Work

In all the firms we visited we tried to look at what skills were important by job type. We asked firms first about entry level workers and then asked firms to make distinctions between other levels of workers. During the pilot we looked at pay grade levels and found that it was difficult to link pay grade always with skill levels. Thus we took an approach that examined job titles to see whether firms would report different requirements in skill or qualification. While this was useful for individual firms, it makes comparisons across firms difficult as similar positions can come out in different levels across the sample of firms. Regardless of type of firm, skills in job function (occupational, job or technical skill), teamwork, communication and cooperation are of paramount important for new entry level staff. Nevertheless, when considering industry type, both banking and insurance industry commented that new entry staff need to have skills in job function, communication, work independently, team work, problem solving, interpersonal relationship, reading, writing, computer and English in order to perform their job. As compared to banking and insurance, the electronics, auto-related, garment/textile

and food industries require less skills for their new entry staff but skills in job function, communication, team work are highly necessary to perform their job.

As survey results showed, the higher level of the job position, the more skills are required in order to perform the job. For instance, the highest level job position is expected to have job specific skills, the ability to communicate with others, the ability to work independently, the

ability to be a part of a team, problem solving, cooperation, analytical skills, creative skills, interpersonal skills, English as well as basic skills (i.e., reading, writing, math).

IV. Finding New Workers

A. Method of Recruitment

The most popular method for recruitment among all surveyed firms is to seek out recommendations from current employees informally and or to post the position on an internal board (55 percent). Many firms report posting the position on the firm's main gate (55 percent). Most of the firms find candidates through the recommendations of current staff members. According to the workers interviewed, 68 percent had found their current position from an internal employee's recommendation and 10 percent from seeing the position advertised on a company board. Workers expressed that they like to work with familiar people such as friends and family. From the viewpoint of managers, staff recommended tend to have lower turnover rates than staff recruited off the street. As one general manager stated, "a new staff recommended by any of the internal staff is better because a new staff is controlled and is taken care of by the internal staff that recommended him or her." Respondents expressed that they save recruiting costs and also know more about the potential employees background by hiring friends and relatives of current employees. A manager at the plastic kitchen products firm commented, "We would prefer our internal staff's recommendation to outsider walk-in for application, because we basically know our staff and can ask questions about the friend or relatives they recommend."

Responsdents also will post the position on the local company gate as a means of assuring they find workers who live close to the plant or office and thus will face no difficulty in getting to work. The multinational firms seem to have no problems finding workers. Workers often come looking for jobs. As the manager at a larger electronic company commented, "Our company has good reputation. Only [with] internal post, we got so many applications. Need no advertising in newspaper. In case that we had too many applicants, we keep all record in the files and will use them next time."

30 percent of the firms expressed more of a concern for the education level of applicants and will try to recruit workers from the a school or university that they value. Only two firms reported working with government and the labor department to find workers. Two companies also mentioned that had recruited workers by attending job fairs. Eight companies will recruit workers by placing advertisements in papers if the other methods yield no results. The insurance company has used the internet and the publishing company will regularly place advertisement in the print media.

B. VIEWS ON EDUCATION LEVEL

In order to learn more about how employers view education and schooling a number of questions were asked about the education requirements for particular jobs as well how different educational levels were viewed in regard to recruiting workers. Questions about whether school grades and transcripts matter were also asked. We found that that 40 percent of the firms were concerned about education levels of all applicants, 30 percent were not interested in the education level of applicants, and another 30 percent said that their interest was dependent on the job being filled. We also asked each firm to tell us about the different levels of worker within the firm and whether the educational requirements varied from one level to another as well as how they viewed education as part of the decision process of who to hire.

The garment, food processing and plastic industries prefer entry level staff to have at least primary school education (P6). In certain industries like textiles and food preparation, primary 6 continued to be adequate for higher level positions. One garment factory used to have no minimum education level but as the manager expressed, "At present, we are more concerned with education level and have set the minimum educational requirement at Primary 6 because it is easier to teach and they have better understanding of work." He seeks workers who have the "ability to learn." All other industries expressed that ideally higher level positions would have more than primary level education but the importance of education varied greatly in the decision making process and often workers who took entry level positions with higher levels of education earned no more.

In the auto firms, education level and occupational skills were not viewed as a critical part of making decision on who to hire unless it was a more senior technical position in which case they sought high vocational graduates. Most of the electronic, plastic and other firms were less concerned about education level and specific skills than other characteristics. For example one manager commented, "When we want to hire a new worker, we never consider about her/his education. We mainly consider his/her personal characteristics because we believe that when we look at someone, we will know if that person is hardworking, diligent, lazy or not." The Human Resource Manager at one furniture firm also did not place much weight on the educational background of applicants as he explained, "Education is not the only factor of recruitment as personal interest and learning interest are considered to be the most important factor related to the job function and the job requirement." The Human Resource Manager continued to explain that for the position of operator "education level is not important, but ways of thinking and human relations are important." Other firms expressed similar viewpoints. Overall most of the manufacturing firms do not consider schooling, the school attended, or grades of an applicant as important factors in deciding who to hire.

We found some firms very interested in higher education levels for all positions and some firms have clearly established minimum levels or ideal levels. The electronic and auto-related industries would like to have staff with at least senior high school level (M6) but the importance of education in the recruitment process varies from firm to firm. One manager from a maker of controls for air conditioners commented, "At present, the company will normally choose candidates who are at least secondary 3 because higher educated staffs will be able to communicate better than less educated staffs." A high performing auto plant looks for high school graduates because workers need to read graphs and be competent with basic calculations.

Another manager of a multi national electronic firms commented, "For an operator position, the company requires a minimum education level, a high school diploma. Either high school or vocational diplomas are acceptable. We are looking for their ideas and attitude. We have no problem in recruitment because we [do not have] many requirements; we only look at education level. We need an optimistic staff towards the company and co-workers. They need to work with others in our [company name] community. Other than that, everything can be trained." The company has no preference as to whether the applicant comes from a general or vocational school. 60 percent of surveyed firms considered the school that the applicant attended not an important factor for recruitment. The same company requires clerks to have typing skills, computer skills, and English knowledge. Technicians are required to have specific skills that match the job description such as electronic skills. Most firms require vocational education for job positions in level 3 and 4 and high vocational for job positions in level 5.

Some employers did have views on the actual schools workers attended. For those firms with a large proportion of male workers, the school that the applicant attended become an important factor for recruitment. For example, the management team of a big leading auto-related company would like to recruit male workers with high responsibility, discipline and obedience and it recruits workers from military training schools as they believe that graduates from military school will make better employees. A human resource manager of another auto-related company also prefers to employ graduates from government schools. He explained, "The company will only employ people who graduated from government schools, as the culture of these schools is more adaptable to the factory work – 'Assiduous and practical'. Applicants from schools with bad reputation, like quarreling will not be employed. Students from these institutes have the tendency to be irresponsible, trouble-makers and job skippers." The insurance, garment, food processing and shipping industries are not interested in the school an applicant attended.

The banking and insurance firms require higher education levels for new entry staff than the other industries and were more likely to look at both the school/university the worker attended and the school/university grades. An entry level position at one of the banks requires staff that have completed senior high school (M6), or junior vocational school (PVC) and graduates with a bachelor degree are preferred. As one Bank manager stated, "The bank does not have trust in the capability of the employee with educational level lower than undergraduate study [bachelor degree]." Many entry level positions will even have a graduate degree. The other bank requires virtually all new entry level staff to have a least a bachelor degree. English and computer skills are critical and often they have to recruit those with a bachelor degree to find the English skills. As one manager at the insurance firm explained, "We aim to be a top player in the business; we need caliber in our company – capability, good command of English and ready for all situations. Thus, BA is important."

Two-thirds (75 percent) of companies do not look at the exam grade of applicants. Normally they consider other factors such as the applicants willingness to work and appearance. The Managing Director of a plastic plant mentioned, "No, we are not particular on education level. It is dependent on one's character, i.e., willingness to work, taking effort in the job." The other 25 percent do look at grades but just as one part of the process. The manager at the insurance firms sees grades as a sign not of how smart a person is but how hard they worked during school.

C. Attributed and Skills Sought in Selecting New Workers

All the firms use application forms and have interviews with applicants. In the application form, the applicants have to fill in their personal data, educational background, working experience, any hobby and depending on the company answer other questions. In addition to the application and interview, 60 percent of the firms require a written test for new applicants and of these firms most (83 percent) set different tests for different positions. High performing firms are more likely to require a test (69 percent of firms) compared to low performing firms where 43 percent require a test. All the firms in the banking, auto-related, furniture and publishing industries have a written test for applicants. The tests usually takes 30 minutes to 2 hours.

Regarding the content of test, it is significant to note that 50 percent of those who give tests, representing the large and high performing firms from banking, electronics, auto-related and food processing industries, give an English test when recruiting new employees. The English tests usually check knowledge of basic vocabulary or vocabulary related to the job. For example, what does yellow mean in Thai? Besides, another 50 percent test the applicant's job-related skills (occupational or technical skills). In one firm prospective welders must weld steel. The applicants interested in welding at this firm are evaluated on work process, timing and tidiness of work. If the applicant cannot pass the practice test, the supervisor will make the decision whether he/she would be able to deal with the work, be able to be trained or whether he/she has a good personality. Interestingly, 75 percent of the firms who have test for new applicants had not ever disqualified applicants who performed poorly in the test.

All firms have interviews for applicants when recruiting new employees. Half of them took about 30 minutes to 1 hour for interviews whereas the other 40 percent spent less than 30 minutes for interviews. The remaining 10 percent took a longer time for interviews, i.e., more than 1 hour. All firms in garment, plastic, and furniture industry took less than 30 minutes for the average interview. The banking, insurance and shipping firms took about 1 hour for each interview. There was one family owned firm in the electronic industry that took more than 3 hours for an interview. In family owned businesses it might be the mother or sister of the owner that does the interviewing while in larger firms the interviews are usually done by a head of human resources. One of the high performing auto firms conducts group interviews with multiple applicants at once with 2 or three interviewers meeting with between 5 and 10 applicants at one time. This allows the firm to see who can handle a group situation and handle conversation among strangers.

During the interviews with applicants, more than 50 percent of the firms report asking questions to learn about the following areas: previous working experience (70 percent), family background and residence (65 percent), personality & character (60 percent) and attitudes (50 percent). Most of the firms ask applicants about their previous working experience as they want to know whether their experience is relevant, suitable or applicable to the job being sought. While some firms like related experience, others prefer to find new workers with no bad habits. Questions about an applicant's family background and residence help provide information about values and whether the applicant will easily be able to commute to work. One manager from an electronics firm explained the importance of asking about family by saying, "Good family

background is believed to be the base for good temper and positive thinking." Another manager in an auto parts firm stressed, "We want to know where they live and how they travel to work. If it is difficult for them to travel to work, it is possible they will be late at work."

In addition to previous working experience, family background and residence, many companies seek to know an applicant's personality, character, and communication skills. An applicant's attitude is very important for a firm because it is the basic factor of working performance. A human resource manager of a food processing company mentioned that attitude of workers can be proved by their opinions. He stated, "We consider their quality mind and their ability to contribute to the company. Those with working experience are asked about quality. We will ask them whether or not they used to suggest good ideas as to improvement of quality." According to the General Manager of a small electronic firm,"...When we want to hire a new worker, we never consider his or her education. We mainly consider his or her personal characteristics because we believe that when we look at someone, we will know if that person is hardworking, diligent, lazy or not." The managing director of a plastics firm also uses the interview to look at character as he explained, "...From the way the applicant speaks, I can see whether he can be trusted, reliable, and honest." The attitude in these smaller firms is that with time they can train any worker for almost any position if they have the right attitude and character.

One third of surveyed firms pay attention to an applicant's communication skills. They consider speed of response and the ability to answer questions appropriately. A manager of an auto-related firm said, "If the interviewee can answer the questions immediately rather than keep hesitating, this shows that they do have certain sense." In these open ended questions, high performing firms were more likely (46 percent) to mention the importance of communication and verbal skills than low performing firms. Communication skills were critical to all the service sector firms.

During the interviews with applicants, some attributes can also be observed, such as, health, personality, "face", appearance and dressing. Most of the firms prefer "straight" female/male applicants. A human resource manager of a big semiconductors firm said, "We also look at an applicant's personality because most of the staff is female. We do not prefer a tomboy applicant because we can foresee problems later in the working environment. We prefer a straight male/female." The Managing Director of a plastics firm also discussed how he closely observes the applicant. He mentioned, My questions are general, but I will observe the way an applicant answers. If the applicant's answers without looking straight at me, I do not think the answer is trustable." Three of the companies discussed how they read an applicant's character by looking at the applicant's face. They believe "face" of applicants can tell whether the character and personality, i.e., honesty, sincerity.

During the interviews, applicants will be also asked about activities during their school days or other social activities in which they participated. This is to know whether they have any experience or skill in team work as most of the firms see the ability to work with others as an important skill. Only applicants who can work well with others are considered as qualified. As told by the Managing Director of an electronics company, "I prefer the applicants who have ever joined activity/extra curriculum when studying in school to those applicants who only have good grades in the examination but never joined any activity. This is because those who join activity

have the experience of working with others and they know to contribute to others or the community and they tend to have less problems with other co-workers during working." One worker who went through the group interview at the auto plant thinks he got the job because of all of his activities as he explained, "I am a sport man, during school I played many kinds of sports such as football, volley ball and basketball."

Almost all firms across each industry want to know about applicants' working experience, activities done during study and the reason to apply for the job. Except the banks and insurance firm, all firms are concerned with applicants' family background. Only 7 of the firms ask applicants about technical skills and knowledge during the interview. The garment/textile firms tended to be interested in asking about sewing experience and knowledge.

Firms were asked what were weaknesses they found in entry level applicants. While responses varied widely, the most common weakness of applicants, expressed by 40 percent of firms, is poor communication skill, i.e., unable to answer questions clearly or to slow in responding to questions. A human resource manager of a small foreign bank said, "Even if they have good experiences if they are poor in expression and communication, then we exclude them [based upon the] interview." Other firms mentioned weaknesses such as lack of self confidence. A manager of a publishing firm commented that because most applicants did not have a chance to express their ideas during school days, they became afraid to express their opinion to others. As she said, "We think that perhaps they are not confident enough to apply for jobs by themselves because they come here with friend or sometime with their father." Others mentioned finding workers with poor appearance, weak personality, a lack of general knowledge and poor education background as weaknesses.

The management interviewed were asked to rank the importance of different skills when considering a new entry-level applicant (1 being not important, 5 being most important). We found that work habit & attitude (4.5 mean score) were the most important factors, followed by ability to learn new occupation/job skills (4.4), people skills (4.3) and occupational/job skills (4.2). This implies that in the eyes of management, applicants' attitudes and skills in human relationship are more important than basic skills, such as reading and writing. An applicants' ability to learn new things is seen as more important than occupational skill. In other words, often workers without working experience tend to have equal opportunity to get hired as those who already have occupational skill. It is important to note that 40 percent of respondents did not think occupational job skills were important giving a response of either a one, two, or three.

For the banking, insurance and service industry, while the same skills were viewed as important, skills in English and computers were the most important factors when considering a new entry level applicant. While manual skills are still important factors for the electronics, auto–related, garment, food processing, furniture and publishing firms, the rest of the firms were not concerned by manual dexterity or strength.

The management interviewed were asked a related question where they had to rank the importance of different factors in making a hiring decision (1 being not important, 5 being most important) and then indicate the single most important factor. An applicant's attitude was consistently viewed as being very important (4.2) with 60 percent believing it to be the most important factor. An applicant's communication skills were viewed as being the next most

important factor with an average of 3.8. However, only one large locally owned auto part plant thought this to be the most important factor. The third area seen as being important in making hiring decision was the applicants previous work experience (3.1). However, it is important to realize that only 50 percent thought it to be important or very important. In fact 25 percent, felt it to not be important. However, 30 percent of the respondents felt that previous work experience to be the most important factor in making a hiring decision. This was true for one of the banks, the insurance company, both garments firms, one food firm and one plastic firm. One electronics firm said that scores on the company administered test were the most important factor in hiring.

V. Conclusions and Implications for Policy

Across the sample, skill needs are increasing as establishments face pressure for higher quality goods and services at lower costs. Even the small family owned electronic and plastic plants they do not have high performing work practices feel these pressures. The pressure for quality and the introduction of new technology and different work processes are associated with a higher demand for workers with more skills. However, the industries included in this study vary widely as do the skill needs. At the high end are service firms like banking, insurance, publishing and shipping. The greater the number of front line workers in the service sector firms that have to use computers and English skills, the higher the preference for college graduates. Like in other recent work done in the hotel industry looking at front desk clerks (Abelmann, 1999), a college degree acts as a proxy for English skills and an ability to adapt easily and learn new general financial skills. Many jobs that previously were filled with high school graduates are now being filled with university graduates.

The firms with high performing work practices have different and higher expectations for workers as reflected in both what skills they report as being important and in how workers are evaluated. Some of the high performing manufacturing firms in areas such as electronics and auto are very rigorous in how they measure and assess quality. In some of the electronic and auto firms, workers need to be able to understand basic statistics and be able to read a variety of graphs related to quality monitoring. In some cases, the front line workers are responsible for the collection of the data. While other establishments have much lower quality standards as well as lower standards for entry level workers, the standards are rising. The firms with the lowest education standards, those in the garment and food preparations sector, used to have no education requirement and now have established at least a minimum of primary school. These jobs continue to be the very low skill and low wage. Interestedly, however other higher skill jobs that require a high school degree pay very similar entry level wages. Most of the garment and food preparation jobs are dead ended and these firms experienced the highest turnover rates. Workers who are able to progress in these establishments tend to be the workers who enter with higher levels of education. Regardless of education, most all workers interviewed began work at the entry level and most employers report promoting from within.

While across the sample, firms do tend to have some minimum level of education required, overall very little attention is given to what kind of school an applicant attended and little weight given to grades or examination scores. While firms are interested in job specific skills, there is a greater interest in assessing work habits and worker attitude even in the textile and food establishments. When one pushes as to what is meant by attitude it encompasses a

wide array of responses ranging from a willingness to learn to and ability to embrace the demands of a changing workplace. The ability to get along with others is also often mentioned when answers were probed. The implicit assumption is that these attitude and work habits are not learned in the current academic part of school.

Employers were interested in learning about an applicant's extra curricular activities as participation was viewed as evidence that an applicant could work with others. Many employers assumed that applicants coming from a secondary school would have basic reading and math skills. However, respondents do not assume that completion of school signifies that an applicant can communicate effectively. One of the important characteristics employers assess in the interview process is the applicant's ability to communicate effectively. While many of the manufacturers value English and computer skills the current expectations of what knowledge workers will have is low. The growing importance of computers and English suggest the importance of focusing on these areas as a part of curriculum reform. The interest in communication skills and team work also has implications for how students learn and what students can do as a result of schooling.

Specific job skills do matter but entry level workers are expected to gain these on the job. Even in the high performing auto plants, workers who come with general skills are welcome and the specific training takes place in the workplace. In some firms, pure physical strength matters as the jobs require heavy lifting. But physical strength alone is not enough. The research does indicate a shortage of higher level technical specialists but most employers develop their own expertise by developing the entry workers. Employers express little or no preference for secondary vocational graduates over general secondary graduates and show little interest in school grades. This disinterest, however, is not a sign that occupational skills are not important but that the current system is not viewed as a provider of what is needed. Many of the workers who attended a vocational school acquired skills not connected to their current job

The in-depth case studies done for study suggest that the commitment by the Thai government to expand secondary education and provide more choices for youth to continue education will have returns for the type of jobs available to those that complete school. The study suggests that a strong base of general skills that include helping students become life long independent learners important. It is not clear from this study that the higher costs of secondary vocational school merit an additional investment and expansion. However, some of the hands-on pedagogy and experience of teaching computers currently done in some vocational programs should inform reform in the general academic track.

One critical question is whether students who complete secondary school and do not continue on to tertiary institutions will take jobs in industries with poor work environments and low skills. While the industries are beginning to hire more educated youth, the wage data from the study suggest that wages continue to be close to the minimum wage across entry level positions in the manufacturing firms.

PRIVATE VOCATIONAL EDUCATION IN THAILAND

Richard Johanson, and Werawat Wanasiri

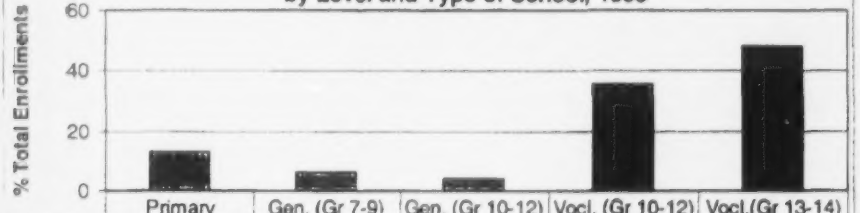
I. INTRODUCTION

This report reviews private vocational education and training in Thailand. The review is divided into four parts. Part I describes the system and its various components. Part II evaluates the system in terms of relevance, quality and efficiency and identifies some of the strengths and weaknesses. Part III looks at implications of the new Education Law on private vocational education. Part IV discusses four policy challenges and offers some policy options for the future.

II. SYSTEM DESCRIPTION

Vocational education has relatively more private ownership than any other level or type of education in Thailand, as shown in Figure 1.

Figure 1: Private as a % of Total Enrollment by Level and Type of School, 1998



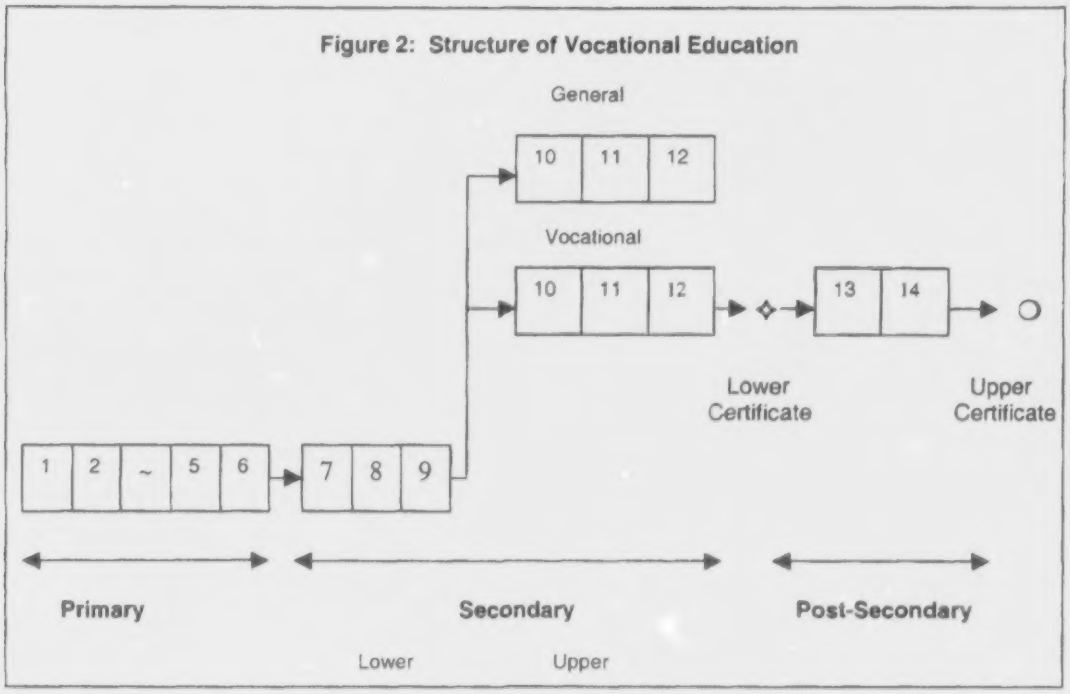
	Primary	Gen. (Gr 7-9)	Gen. (Gr 10-12)	Vocl. (Gr 10-12)	Vocl.(Gr 13-14)
% Total	13.2	6.1	4.2	35.8	48.2

Source: OPEC, 1998.

A. STRUCTURE

Vocational schools function in parallel with general secondary schools in Thailand at the upper secondary level, and also at the post-secondary level, as shown in Figure 2. Two main programs are offered: (a) the lower certificate of vocational education (3 years, grades 10-12); and (b) higher certificate of vocational education (2years, grades 13-14). In addition, a very small program offers a diploma of technical education to 240 students who have passed Gr. 12 in upper secondary schools (2 years, leading to the equivalent of the lower certificate of vocational education).

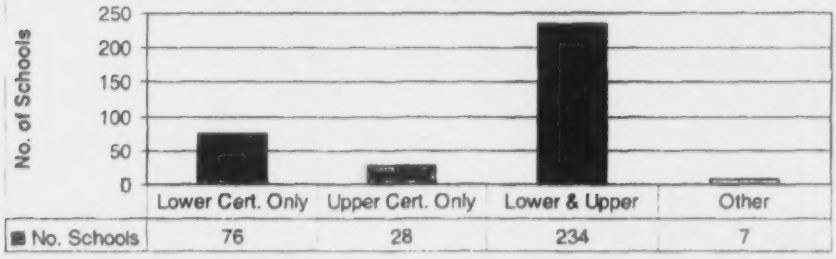
Figure 2: Structure of Vocational Education



B. SCHOOLS

Private vocational schools mostly give courses at both upper secondary and post secondary levels (lower certificate and upper certificate). The distribution by educational levels is shown in Figure 3 below.

Figure 3: Number of Vocational Schools by Level of Certificate, 1998



Source: OPEC, 1998, Table 11.

About 30 percent of the private vocational schools are located in the Bangkok metropolitan area (compared with about 10-17 percent of the population[1].) Private vocational schools are sizeable, averaging 1270 students in total enrollment. Schools, at least in large urban areas, operate on multiple shifts and thereby make intensive use of facilities and equipment. In Bangkok, the vocational schools visited all operated on three shifts, covering the hours from 7am to 9pm. The ratio of students per classrooms are reasonably economical, varying as shown in Table 1:

Table 1: Students per Classroom by Level and Field, 1998

Field	Lower Certificate	Upper Certificate
Commerce/Bus. Admin	40	34
Industrial Trades	36	32
Agriculture	27	-
Arts & Crafts	33	21
Average	39	33

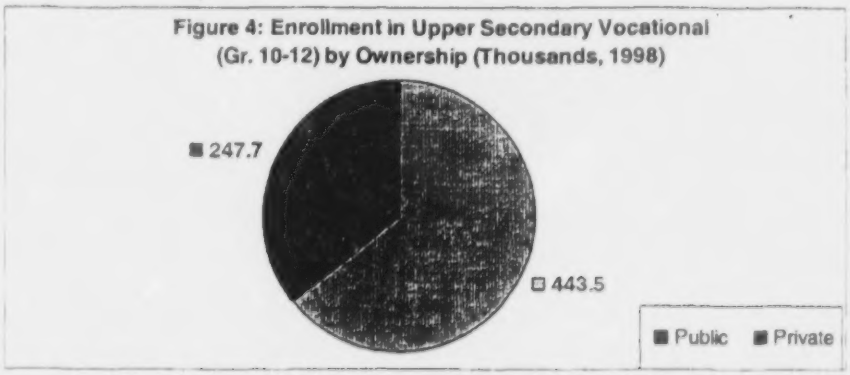
Source: OPEC, 1998, Table 15, p.37.

C. ENROLLMENTS

Thailand has had strong enrollments in vocational education for several decades. Parents traditionally have believed if their children could not go to university, the best alternative is vocational education so that they could earn a living.

Upper Secondary (Grades 10-12)

Vocational education makes up about makes up 42 percent of enrollment at the upper secondary level.[2] Within vocational education private schools account for about 36 percent of all enrollments, as shown in Figure 4.

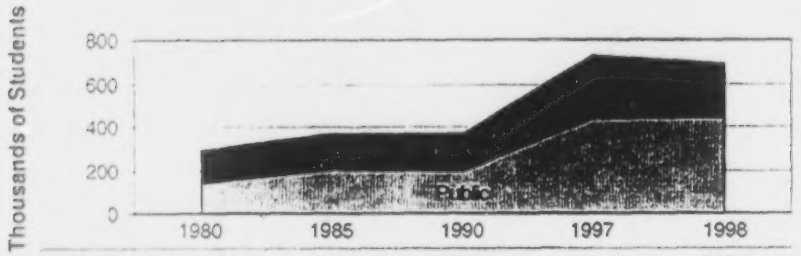


[1] The population of Bangkok consists of about 6 million officially registered inhabitants. Estimates of non-registered inhabitants range up to 4 million. Thus, the population is from 6-10 million.
[2] Data for 1998, Table 2, p. 10, Statistics of Private Education, 1998.

About 55 percent of the students in private vocational schools at the upper secondary level are girls.

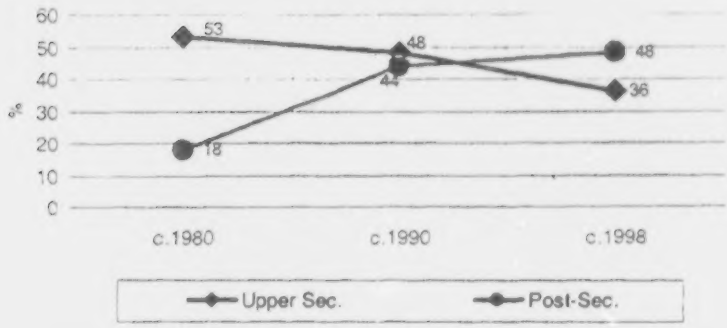
The proportion of students enrolled in private vocational education, however, has been declining at the upper secondary level. In 1980 more than half the students were in private schools, but this declined to less than 40 percent in the late 1990s, as shown in Figure 5a and 5b.

Figure 5a: Enrollments in Upper Secondary (Gr. 10-12) Vocational Education by Ownership (1980-98)



	1980	1985	1990	1997	1998
■ Private	156.4	163	172.1	291.4	247.7
□ Public	138.5	205.1	194.6	440.5	443.5

Figure 5b: Private Vocational Enrollment as a % of Total Enrollments by Level



Source: World Bank, 1991, Table A5 for 1980, 1985; OPEC, 1998, Table 2 for 1997, 1998.

The economic crisis of the past three years accounts for most of the declining enrollment at the lower certificate level. Statistics are not available for 1999 yet. When available, these data should demonstrate more clearly the depth of declines. However, between 1997 and 1998 total

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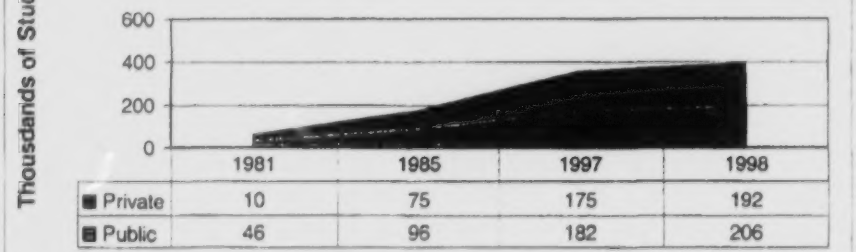
enrollment in private vocational schools at the lower certificate (Gr. 10-12) level fell by 44,000 students, or 15 percent. Data are unavailable across years on enrollment in the first year of lower certificate studies. However, as a proxy, in 1998 enrollments in the first year (Gr. 10) in private vocational schools were 10 percent less than the second year (Gr. 11) – 76,000 and 84,600, respectively. Females accounted for almost all of the decline, including a 20 percent drop in enrollment between years one and two.[3] The sharp drop in student intake is confirmed by statements from private school managers. Two major Bangkok institutions saw a decline in first year enrollment between 1998 and 1999 of between 20-25 percent. Dropout in the second year also increased substantially, to about 10 percent.

Parental inability to pay during the recession explains most, but not all, of the decline. In addition, school managers point to the expansion of free (or much less costly) public education as a factor in siphoning off potential students from private vocational schools.

Post Secondary (grades 13-14)

The relative shares of public and private are different at post secondary levels. In contrast with upper secondary level, enrollments in private vocational institutions make up a larger and growing share at post-secondary level (diploma, or higher vocational certificate). Private schools account for almost half the total enrollment at post secondary and this percentage has grown since the 1980s, as shown in Figure 6.

Figure 6: Enrollments in Post-Secondary Vocational Education by Ownership (1981-1998)



	1981	1985	1997	1998
Private	10	75	175	192
Public	46	96	182	206

Sources: World Bank, 1991,Table A5 for 1981, 1985; and OPEC, 1998, Table 2 for 1997, 1998.

In terms of gender distribution, 62 percent of the enrollment is female in private vocational schools at the post secondary level. In contrast with the sharp decline of enrollments at the lower certificate level, enrollments at the upper certificate (Gr. 13-14) have actually increased in private vocational schools during the economic crisis. Between 1997 and 1998 enrollments for the upper certificate increased by 10 percent or 16,800 students (from 174,600

[3] OPEC, 1998, Table 27, p. 69.

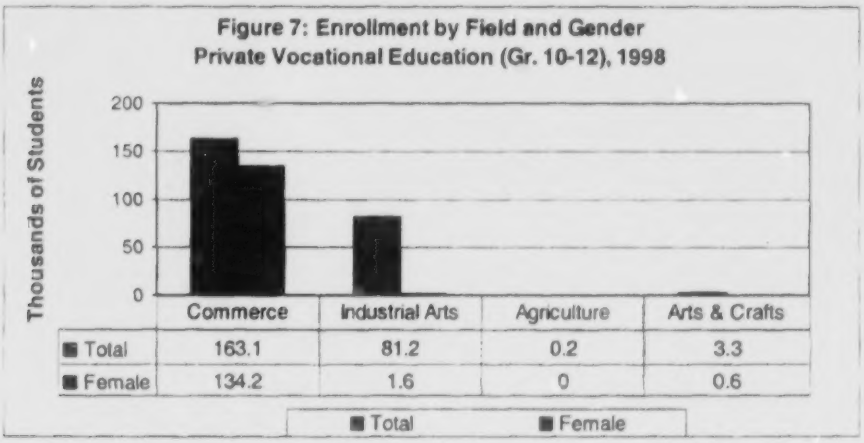
students to 191,400 students.[4]) The reasons may include lack of job opportunities for graduates of Gr. 12 in the labor market and the need for better qualifications to compete for available jobs.

D. Fields of Study

Lower Certificate of Vocational Education

Enrollments tend to be concentrated in two fields of study: commerce and industrial arts. More than half the students at the upper secondary level in private vocational schools study commerce and about a third follow industrial trades. Enrollments by field were divided along gender lines: More than 80 percent of the students in commerce were female and virtually all of the students in industrial trades were male, as shown in Figure 7 below.

Figure 7: Enrollment by Field and Gender
Private Vocational Education (Gr. 10-12), 1998

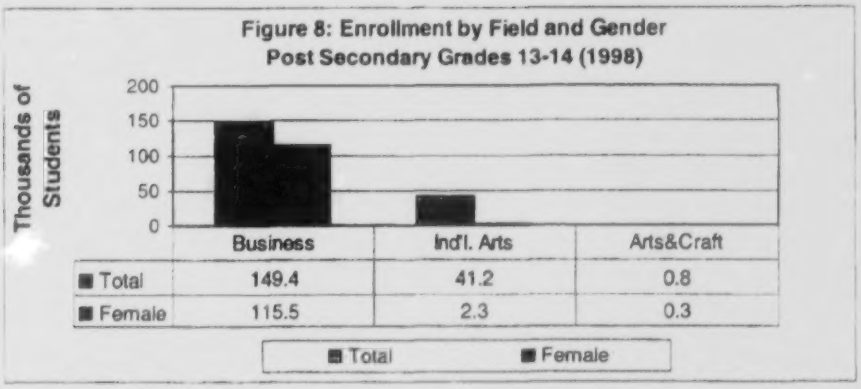


Source: OPEC, 1998, Table 12.

Post Secondary

The same pattern applies at the post-secondary level (higher certification of vocational education.) Enrollments concentrate in two fields, business administration and industrial arts. They are also clearly divided along gender lines, with females taking up more than three fourths of the places in business administration, as depicted in Figure 8.

[4] OPEC, 1998, Table 27, page 69.



Source: OPEC, 1998, Table 12.

E. Organization and Management

The Office of the Private Education Commission (OPEC)

The role of the OPEC, one of fourteen major departments of the Ministry of Education, is to oversee private education. Its purpose is to promote private education as a means to reduce public expenditures and expand educational opportunities. OPEC reportedly does not do much to inform the public about the quality of various vocational schools – in part owing to the absence of objective quality standards. OPEC is responsible for carrying out the stipulations of the Private Education Act of 1981 by means of regulations and inspections. OPEC has a staff of 28 people in the Vocational Schools Division who are responsible for enforcing the regulations. To supervise the 345 private vocational schools the Vocational Schools Division counts on the assistance of three supervisors of vocational schools within OPEC, plus 5-10 OPEC staff in each of the Regional Education Offices and various provincial education officers. Schools are supervised on average twice per year.

The legal basis for government regulation of private schools dates back to the Private Education Act of 1981. Several attempts have been made to revise it, but without success. The new Education Act (1999) calls for the establishment of new regulations of private education, and refers to "promotion" of private education rather than "control" of it. At present schools must act according to a thick set of regulations.

Government regulates private (vocational) schools in the following ways:

1) Establishing a school: (a) The proposed syllabus must be approved by the Office of the Private Education Commission. (b) A three-person inspection visit takes place to check on the physical facilities, safety features, qualifications of teachers and administration, etc., (c) Based on the inspection report, the school is granted a license to operate for Bhat 1000. This approval process could take from 3 months (for those experienced in the process and establishing

a new branch of an existing school) to about one year for a new school. Approval to operate a vocational school is for an indefinite period. There is no "probationary" status.

2) Operation of a school. State inspectors visit the institution twice a year to ensure that the premises, curricula and teaching programs and being held according to plan. If violations are found, recommendations are made for improvements within a specified time period after which the school can be closed. There have been no reported cases recently of schools being forced to close.

3) OPEC prescribes the curriculum to be followed, the number of periods per week subject for students; the minimum qualification of teachers; teaching hours per week; maximum class sizes; minimum sizes for teaching space; and minimum starting salaries for teachers according to the Government civil service scale[5].

The Federation of Private Vocational Schools

The Federation of Private Vocational Schools was established in 1971 as a coalition of owners, and was officially licensed with the Ministry of Education in 1975. It has 300+ members at present; virtually all private vocational schools belong to the Federation. The functions of the Federation are to: (a) share experiences among members; (2) help members run their schools; and (3) represent the views of private vocational schools to government through the Office of the Private Education Commission (OPEC).

School Management and Supervision at the Local Level

Each private vocational school is required to have a board of directors that meets at least twice a year. The owner selects the members, usually local persons and representatives of the staff. The boards serve an advisory function and have no real executive powers in most cases.

Managers of private vocational schools pride themselves in being able to get the most out of limited resources. In contrast with public vocational schools that have to take directions from distant central authorities, they have some freedom to act and take initiatives within the existing regulatory framework. One president of a large private institution of about 3000 students stated that each of the four vice presidents (personnel, finance, academic affairs and student affairs) has the authority to make decisions. This means the administration can operate more efficiently and problems can be addressed more quickly. Still, schools could be run better if the private institutions had more flexibility, in particular to add new courses in response to market demands (e.g., computers).

Private vocational schools are supervised through the Provincial and District Education Offices that report to the Office of the Permanent Secretary in the Ministry of Education.

[5] No salary scale is prescribed beyond the starting salary.

Schools must report data on the numbers of students, teachers and graduates to the district superintendent. Inspection visits take place semi-annually to check facilities and equipment.

F. STUDENTS

Public vocational schools can be selective. They enjoy generally a good reputation (most people assume that public schools automatically have good quality) and public institutions charge much lower tuition fees (about one fifth or one fourth of the private rates. See Section I.I below).

Public vocational schools have many more applicants than they can accept, so each school prepares an entrance test based on scholastic aptitude. Students with the best scores are admitted until intake capacity is reached. In this sense, the public vocational schools "cream off" the scholastically most able students.

The best prepared students also tend to come from families with greater income than those who do not pass the admissions process. If correct, this hypothesis means that the poorer families are forced to pay full tuition for vocational education while the better off get free or reduced tuition. The facts should be investigated and clarified.

Private vocational schools get the residual students who cannot pass the entrance examination to public schools, but can still afford to pay the full tuition costs. Private schools reportedly have to wait until the last minute (after several entrance examinations have been held at public schools) before they know the size of their intake for the year. Private schools are generally not selective, accepting perhaps 95 percent of the applicants. Only students with known behavioral problems are rejected. The level of student intake means that many of the private schools have to engage in remedial teaching to bring students up to standard.

Enrollments in private vocational schools are sensitive to downturns in the economy. Intake levels have been declining in several private vocational schools over the past couple of years. One institution lost 150 students after the first semester out of a total enrollment of 700. Another school reported that its normal intake of 1000 students dropped to 450 students in 1999. An important factor explaining declining intakes, besides the economic recession, is the policy of government that anyone who wants to continue in general secondary education at grade 10 will be accommodated in a public school free of charge regardless of previous academic record. This is diverting students away from vocational schools, including private ones.

G. TEACHERS

OPEC specifies minimum teacher qualifications for private vocational schools. The qualifications of teachers in private vocational schools have increased dramatically over the past decade. In 1985 it was stated that "teacher qualifications in private vocational colleges are, on average, very low."[6] Almost three fourths of all teachers in DOVE institutions had qualifications at BA level or above in the mid-1980s, compared with just 21 percent in private vocational

[6] World Bank, 1991, p. 82.

colleges. [7]The situation changed dramatically by the late 1990s. In 1998, 77 percent of the teachers in private vocational schools had qualifications of BA or better.[8]

Private schools report no particular difficulties in recruiting teaching staff. The most common methods are recommendations from existing teachers, radio and newspaper advertisements. They must pay the same starting salaries as in public schools, but are not compelled to have a salary scale with periodic increments for service. The lack of such a scale is a source of discontent among private teachers. As with public vocational schools it is chronically difficult to recruit instructors with industrial experience to teach practical courses. Teacher hours (20-24 periods/week) are specified by the Office of Private Education, as are maximum class sizes (40-45 students for certificate level and 30 students for diploma level.) Overall, the student:teacher ratio was 24:1 in 1998, down from 27:1 in 1997.[9] The teachers of private schools are not allowed at present to participate in training programs for teachers sponsored by DOVE or RIT. All school directors wish to gain access for their staff to teacher upgrading programs offered to public school teachers.

H. Curricula

Private schools can choose courses of study at both the certificate and diploma level from three sources: (a) DOVE courses which are already accredited; (b) Courses from the Rajamangala Institutes of Technology (RIT) which are accredited, or (c) propose new courses which have to be accredited by DOVE. In the future the RIT will phase out of courses at the certificate level and concentrate on higher levels. Invariably, courses from DOVE or RIT[10] are chosen to avoid lengthy accreditation procedures. Reportedly, it requires about as much documentation, effort and time (up to one year) to introduce a new course as it does to start a new institution. New programs cannot be offered without written permission by DOVE.

The curriculum is rigidly specified, and includes subjects, number of periods per week (30-35 for students) and syllabus specifying content to be covered. The ratio between theory and practice is about 65%:35% at the lower certificate level and 40%:60% at the upper certificate level. The central administration in DOVE established 17 specializations from which schools may choose, but, once chosen, the school must follow the standardized curriculum. Some electives are permitted (about one per student per term.) The private schools did not participate in the design of the curricula[11]. Respondents were unclear about the degree of employer involvement in curricula development at the central level. Reportedly some industrial councils exist, but the extent to which they were involved and consulted is not known. In any event, by

[7] *Ibid.*, p.83.
[8] OPEC, 1998, Table 13.
[9] Enrollment dropped from 466,500 to 439,400 between 1997 and 1998, but the number of teachers increased from 17,200 to 18,000. Source: OPEC, 1998, Table 3, p.11
[10] Reportedly, the RIT curricula are less restrictive than those of DOVE and allow more electives.
[11] The OPEC offered in 1999 to help any private school develop its own curriculum to suit local needs, but only one school applied.

law the curricula have to be defined by civil servants and must be approved by the Ministry's Department of Academic Affairs (Directorate General for Curriculum and Instruction.)

In effect, both public and private vocational schools follow the same curriculum. Typical courses within the industrial field are auto mechanics, metal and machine trades, electrical, electronics , construction and technical drawing. In the commercial field the specializations include secretarial work, marketing, business administration and computers.

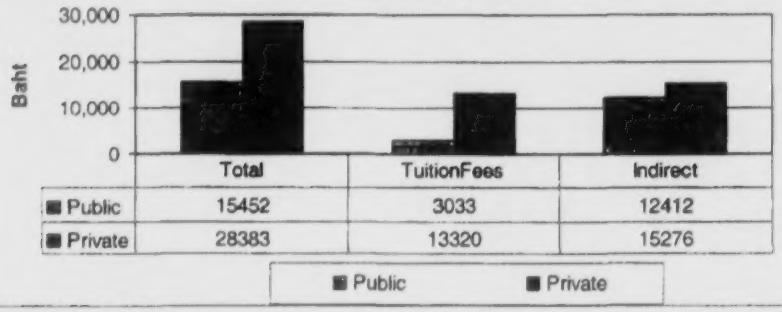
Few private vocational schools have established close linkages with employers. One private institution in Bangkok has established a cooperative factory program with employers, particularly in automotive trades. This is the exception, however, rather than the rule. DOVE has started a "dual system" training in collaboration with enterprises, but they have not as yet invited private schools to participate. Private enterprises, for their part, would rather work with public than private vocational schools (to fulfill their 'social obligations'.)

I. Costs and Financing

The government does not directly subsidize private education at present. Most private schools depend completely, 100 percent, on income from student fees to meet operating and investment expenditures at their institutions[12]. Typical fees range from Baht 13,000 per year for business administration to Baht 16,000 per year for industrial courses at the certificate (Gr. 10-12) level, and about 18,000 to 20,500 per year for diploma level, respectively[13]. No other fees (e.g., enrollment fee, laboratory fee, examination fee, etc) can legally be charged.

A study by ONEC on education finance in 1997 showed the following comparison between public and private vocational schools in terms of household contributions, as shown in Figure 9:

Figure 9: Estimates of Household Expenditures on Vocational Education (1997)



Source: Anthony Cresswell, 1999, p.63.

[12] Some schools have been able to supplement income through donations. "Larger, better established schools appear to be able to generate ... resources from endowments..." World Bank, 1991, p. 138.

[13] A private vocational school run by a non-profit religious foundation charged from Bt. 6400-8300 per semester at the certificate level and Bt. 10,600 at the diploma level with a Bhat 1000 discount to those who could not afford the fees.

The maximum fees that private vocational schools can charge are set by ONEC. The rationale is consumer protection. ONEC bases the ceiling on the average per student public expenditures for operating and (some) investment costs at public vocational schools, plus some allowance for inflation. The calculation excludes the fee income that public schools raise, and therefore does not cover the total expenditures of the public vocational schools. Private schools must meet investment expenditures from fee income, and this is difficult when more than 80 percent of the income goes for staff salaries. OPEC has not increased the tuition ceiling for three years.

Exceptions exist to the fee ceilings. Schools reportedly can exceed the ceiling if they give 5 percent of the total fee income for scholarships (which means that they must raise fees by more than 5 percent to generate additional net income.) One school charges an extra Baht 1000-1500 per student per term as a computer laboratory fee. Another Director negotiated with ONEC and got permission to charge higher fees in view of the extensive building program undertaken at the institution that was being financed from student fees.

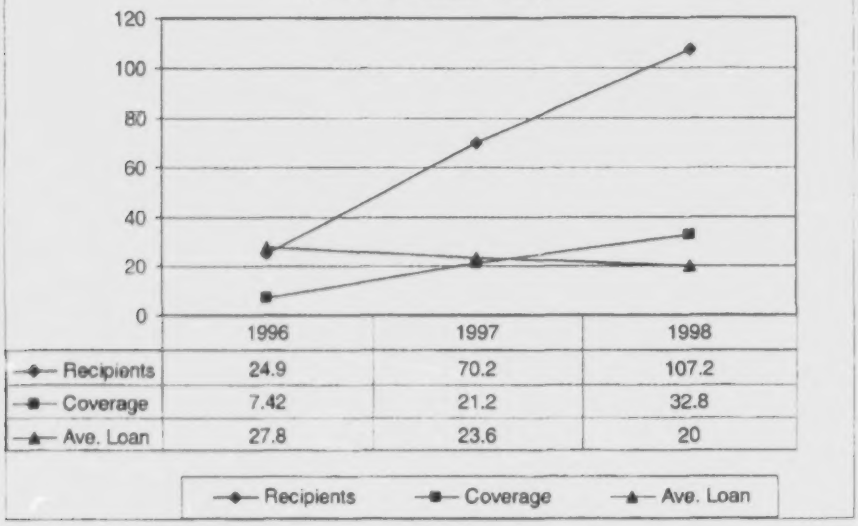
Unit costs per student remain to be calculated and compared between public and private institutions. However, the total cost per student is reportedly about a third higher in public schools than in private (Baht 24,000/student/year vs. Baht 18,000 in private schools.)

No direct subsidies are provided to private vocational schools, but the schools do benefit from indirect subsidies. Teachers, for example, receive six percent of their salaries from the government for pension purposes. This can be collected from a state Bank after five years of service at a private school, or can be transferred and continued if employed by another private school. Private teachers also are entitled to publicly-financed health insurance and allowances for tuition for their children's education.

In addition, private schools benefit from state support for students from low-income families. The number of loan recipients mushroomed between 1996 and 1998, from about 25,000 students to more than 107,000 students. As a proportion of total enrollment, loan recipients increased from 7.4 percent to about one third over the same period. However, in view of increased participation the average loan amount decreased from almost Bh. 28,000 to Bh. 20,000. The student loans are provided on the basis of financial need, with family incomes below Bh. 150,000 per year. Local officials certify financial need of the family.

Figure 10 shows that student loans are available to a substantially increasing minority of students.

Figure 10: Students Loans for Private Upper Secondary (General & Vocational)



	1996	1997	1998
Recipients	24.9	70.2	107.2
Coverage	7.42	21.2	32.8
Ave. Loan	27.8	23.6	20

Scale: Recipients (000s); Coverage (% of enrollments); Average Loan Size (Bahts 000s)
Note: The above table covers both general and vocational private schools.
Source: Adrian Ziderman, 1999, pages. 41-42.

For the past five years schools can also qualify for state subsidized capital loans at four percent interest with a limit of Bh. 5 million. Collateral of 30 percent is required separate from the land on which the schools is located. An initial revolving fund was established of Bh. 690 million, which has now grown to Bh. 878 million through repayments of principal with interest. Nearly 300 private schools (not limited to vocational schools) have received assistance through the fund. Recipients complain that the funds are limited, collateral requirements are steep and it takes up to a year to process applications. Because of the delays some private schools have taken loans from commercial banks, but the interest is daunting (17-19 percent recently, dropping to about 10 percent now) and the requirements for collateral are often onerous.

A second budget was established in 1995 for the purpose of assisting in the establishment of private schools outside the Bangkok area, particularly for underserved areas. The Bh. 20 billion fund is operated through the Government Savings Bank. Applicants can receive up to 60 percent of the costs of establishing a private school (all types). Collateral must be given (cash, government bonds or land) for the full loan amount. Repayment is 15 years with a five year grace period. Interest is currently 6.5 percent plus a 2 percent handling charge. So far 13 schools (including both general and vocational) have been established through the fund. According to OPEC, it is difficult to establish a new private school in the enrollment area of another private school. The established schools tend to be large schools that are trying to raise quality to attract more students.

Tax regulations and incentives apply to private vocational schools. Profits from operation of private vocational schools are free of income tax. Further, there are no restrictions on their use. However, the private schools have to pay VAT on all purchases for educational purposes, e.g. teaching, laboratory and workshop equipment. They have to pay land taxes to local authorities, and they pay utilities according to industrial rates[14] (whereas public vocational schools pay a lower rate.)

The ability of private school owners to realize profits is sharply constrained by government regulations. Limitations include the government-imposed ceiling on fees, floor on teacher salaries, prescribed teaching periods/week; limits on class sizes. Another option in theory for reducing costs per student, reducing the number of student class contact hours per week, would not be desirable or allowed. Thus, the only way for school owners to maximize profits is to enroll more students. This incentive may account for the average large school sizes.

However, owing to the economic downturn, the private vocational schools are loosing students. The extent of the loss has not yet been documented because of delays in collecting and publishing statistics, but is expected to be substantial. – in the order of a 20 percent decline in first year students (See Section I.C.1). In addition, an increasing proportion of students are behind in their tuition payments. The number of students owing tuition to private upper secondary schools (general and vocational combined) more than doubled from 3,300 to 7,800 students between 1997/98, and the average amount owed increased from Bh. 1,500 to Bh. 4,060 over the same period.[15] These reductions could have devastating effects on private schools without sufficient financial reserves to carry through the lean periods.

J. Quality Assurance

For the past two years OPEC has offered a program of quality assurance for private vocational schools. Participation is voluntary. In the first year of operation about 20 schools applied, increasing to 60 schools in the second year. The process started with the establishment of quality standards for private vocational education by OPEC. To participate, the school must first apply to OPEC then do its own internal quality assessment according to OPEC guidelines. Second, the school must undergo an external evaluation[16] by a panel of outside experts under the auspices of OPEC. All experts are from the public sector, including DOVE, RIT, and universities. The evaluation takes three days and two nights. Third, the panel prepares a report to a quality assurance committee in OPEC. Fourth, the committee decides whether to grant a certificate of quality assurance to the school and for how long, ranging from one to five years. Fifth, OPEC sends a report to the school with its evaluation, including specific feedback as to where improvement is needed. The school, in turn, can use the certification in its advertising to potential students. The process is reportedly arduous and involves preparation of voluminous

[14] OPEC claims this is a misunderstanding. OPEC has sent a circular to all electric companies stating explicitly that private schools are entitled to non-company (individual) rates.

[15] Cresswell, *op. cit.*, pp. 28-29, and Appendix 5.

[16] Criteria for the evaluation are organized in seven subjects: (i) philosophy and policy goals of the school; (ii) curricula and teaching processes; (iii) personnel; (iv) equipment and facilities; (v) management; (vi) student services and activities; and (vii) student achievement. The latter is evaluated by interviewing about 20 students at random, ensuring that a minimum proportion of students have achieved at least a 2.5 grade-point average, and classroom observation.

reports on all aspects of the school. OPEC does not publicize which schools have and have not received certificates of quality assurance.

K. Outputs

Completion rates are reportedly high, about 75-85 percent as in other types of secondary institutions in Thailand, but have been declining owing to the economic recession. Private schools provide the final examinations for their students, divided into a general examination and a skills test on student practice (or sometimes grades on worksheets will be accumulated and averaged). Schools are free to award certificates and diplomas to those students who pass the examinations without approval from the Ministry, but must report names of the graduates and their grade-point averages to district officials. There are no national tests. As a result of a curriculum change in 1981 graduates from secondary vocational schools are allowed to compete for admission to universities on an equal basis with students from general schools. However, in practice few do.

The vast majority of graduates from the lower certificate level (Grade 12) – about 80-95 percent--go on to further studies at the diploma level, often within the same institution[17]. A high proportion of these students shift fields from technical to social subjects. At most 20 percent enter the labor market after completion of the certificate. Relatively high proportions of graduates from the diploma level (Gr. 13-14) also continue on to further studies, reportedly about 50-70 percent . Thus the system is not a typical pyramid, but more like a "stovepipe". Parents and students are obsessed with getting further education and eventually a degree. Distorted government pay scales account for much of the parental motivation. Government pay scales compensate according to educational qualification, not competence or skills.

III. Evaluation of the System

A. Strengths and Weaknesses

Thailand has a robust system of private vocational education with a long tradition. The value added of formal private vocational education in Thailand is significant. Private vocational schools provide the opportunity for continued education for about 7 percent of the age group 15-17 who otherwise would not be able to attend upper secondary school. Private vocational schools cater to those who cannot find places in public institutions which correlates with lower achievement and probably also lower socio-economic status. Private vocational schools thus make an important contribution to equity at the upper secondary level. Moreover, the schools provide these educational opportunities at virtually no cost to the public. The private schools operate at less cost per student than comparable public institutions, even though teacher qualifications and class sizes are about the same. Pending verification through a costs study, the cost per student appears to be a third higher in public than private vocational schools. Of course, these differences may also reflect differences in quality.

[17] According to the national statistical bureau 92 percent of vocational certificate graduates go on to further studies in higher education.

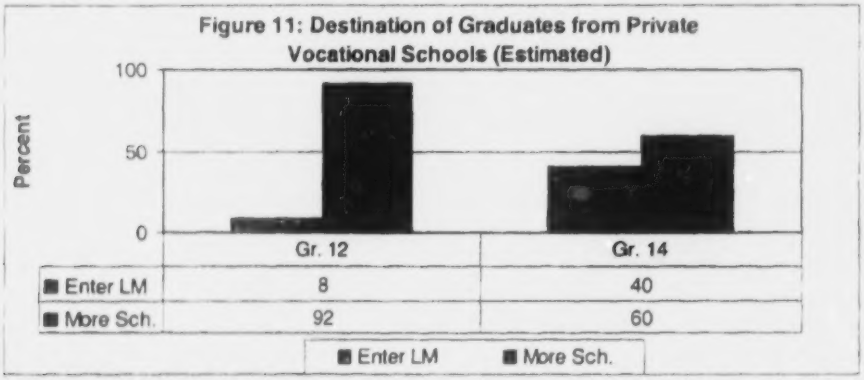
As part of the system of formal vocational training, however, private schools suffer from many of the same weaknesses as the system as a whole. This included over-centralization, rigidity and lack of employer involvement. The following statement in the 1991 World Bank study could apply equally today, "The large and fragmented nature of the system, and current operational policies, make it comparatively rigid in the face of change. Weak labor market information, centralized curriculum development, rules restricting the ability of individual institutions to adjust to new training needs, and poorly developed linkages with employment make it difficult for schools to adapt to the needs of the economy and of students."[18]

B. Relevance to Economic and Social Goals

Economic Relevance

One of the most striking features of private vocational education is that most graduates with qualifications do not enter the laborforce directly, as shown in Figure 11, but continue on to further studies. This is an issue because the purpose of vocational education is preparation for the world of work. It does not require preparation over several cycles to acquire the necessary skills for employment. Consequently, the additional cost of vocational preparation (compared with general education) may be wasted. If most graduates do not enter the labor market on completion of studies, this calls into question the rationale for certificate level vocational studies. The irony of the situation was illustrated by one private school manager who stated that the school increased the proportion of time devoted to practical studies from 35 percent to 50 percent of the total at the lower certificate level so that graduates could "work better in business." Yet more than 80 percent of the lower certificate holders from the institution continued on to further education.

Figure 11: Destination of Graduates from Private Vocational Schools (Estimated)



Source: ONEC, 1999 and Mission estimates

The centralized curriculum is relatively rigid (the Ministry of Education curriculum allows only one elective period per week) and not easily changed. For example, school managers would like to decrease the amount of typing required and increase computer studies in commercial subjects, but are unable to do so.

[18] World Bank, 1991, p.138.

As shown in 1991, private vocational schools did less well than their public counterparts in linkages with employers. According to the interviews, not much appears to have improved in the intervening years. An exception is the cooperative program between the Siam Institute of Technology and the automotive industry.

Social Relevance

The situation in vocational education tends to be inequitable. Students with the best cumulative scores tend to come from families with better family incomes. They have the first choice on heavily subsidized places in public education. Students from families with comparatively less income must pay the full costs of private vocational education at present. This phenomenon is particularly acute in university education, but applies to a lesser extent to vocational education as well. It is called "creaming". Creaming of the better students by public institutions has the unintended side-effect that students least able to pay must pay higher tuition to continue their education. Such a situation is inherently inequitable. It would be better if students were required to pay for their education based on a means test, with state subsidies limited to those with demonstrated economic need.

C. Effectiveness in Reaching Objectives, or Quality of Instruction

Lack of a level playing field: Unfair competition with public vocational schools leads to private vocational schools being "crowded out" by heavily subsidized institutions. It also means that the benefits are not being realized of improved quality through competition between public and private schools.

It is difficult to measure quality in the absence of an exit examination taken by all students, public and private. However, OPEC has started a quality assurance program and some institutions have passed an arduous external review. Similarly, a few institutions are seeking ISO 9002 certification in Thailand. These reviews concentrate mostly on inputs and procedures rather than the substance and effectiveness of instruction. A few other institutions do require students to pass skill examinations of the Skills Development Department (MOL) to obtain their certificates from the institution.

Creaming of students by the public vocational schools has quality as well as equity implications. Private schools wind up accepting students of relatively lesser achievement or ability. As a consequence they must spend more time in remedial education. This reduces time available for coverage of the standard curriculum. As one private school director said, the students are not well prepared and half the time initially must be spent on review work.

OPEC at present does not see its role as one of providing information to the public about the quality of private schools. For example, institutions that did not pass the external reviews for quality assurance were not made known to the public.

D. Efficiency in the Use if Resources

Managers of private institutions have strong incentives to use funds efficiently. Money saved can be used for other educational purposes and also for increasing profits. At present

private institutions reportedly cost 25-35 percent less per student than public institutions[19]. Still, private institutions are excessively controlled by the central government, making it difficult for them to manage their resources flexibly. Greater flexibility could lead to even greater efficiency in the use of private resources. Various restrictions may be holding back the development of private vocational education, such as limits on tuition fees, class sizes and teaching loads.

Declining enrollments characterize private vocational education lately and correlate with the economic crisis. This shows up in declining first year enrollments, down 20-25 percent across an array of institutions. In addition, some students are not able to continue their studies because of lack of funds for tuition. Retention rates for vocational education as a whole (public and private) have declined from 82 percent in 1994 to 76 percent in 1999.[20] Dropout represents resources wasted on incomplete studies.

IV. Implication of the New Education Law (1999) on Private Vocational Education

The New Education Law does not say much explicitly about vocational training, although it calls for a new law to be drafted on vocational training (Section 20). This new vocational law will be drafted relatively quickly, by about the middle of the year 2000. Still, the new Education Law has tremendous implications for vocational training and private education.

According to the Secretary General of OPEC, vocational training is treated as basic education under the new law. The Law has several provisions that will impact on private vocational schools. These include the following points:

a) Right of provision. The right of private organizations, institutions and individuals to provide education of all levels and types is explicitly acknowledged in Section 12.

b) Role of the state. Section 43 seems to suggest a different role for the state vis a vis private educational institutions. Rather than regulation, the role of the state will be to "oversee, monitor and assess educational quality." This could imply a much-needed shift away from control of inputs to a focus on achievements and outputs.

c) Financing: The Law specifies per capita subsidies for students choosing to study beyond compulsory education (9 years, Section 17) and up to 12 years which the state would provide "free of charge" (Section 10). Upper secondary level education, thus, is to be free for any one who wants and is able to pursue it. This includes vocational education. According to the Secretary General, OPEC, a voucher system is being prepared that will pay schools on a per capita basis (for each student enrolled)[21] according to the type of education (general or vocational) equally between private and public education. The basis for subsidy will be the

[19] It is not clear whether and by how much these differences correlate with differences in quality.

[20] ONEC, November 1999. Other sources indicate that dropout rates did not increase in public secondary schools.

[21] One implication of the voucher system is that OPEC and other responsible government offices must have a reliable system in place for verification of enrollments and attendance throughout the school year.

average operating cost per student in public schools by type[22]. The program will be phased in over three years (2000-2002), starting with Bh.1,400/student in 2000 and eventually will reach about Bh. 15,000 per year for students in industrial courses and Bh. 12,000 for those in commercial subjects. Once the system of free tuition is fully in place, schools will not be allowed to charge tuition or extra educational fees. The per capita subsidy for private schools covers only operating costs and excludes capital costs – e.g. for buildings and equipment.

d) Other financial support. Providers of private education are also entitled by the new Law to state support in the form of grants, tax rebates, exemptions and other benefits "as appropriate." (Section 46 and Section 14). In addition, the Law provides for the distribution of low interest loans to private education institutions "for eventual self-reliance" (Section 60-6) and the establishment of a State and Private Education Development Fund (Section 60-7). Such a fund now exists for construction, repairs, student loans, teacher loans and social welfare, but OPEC hopes in the future it will be better funded.

e) Decentralization. One of the main thrusts of the new Law is a move away from centralization to local control. All education below degree level will be administered through local education areas ("education service areas" – Sections 37-39). These areas, inter alia, are expected to promote and support private education institutions. (Sect. 38). Similarly, while broad core curricula are to be designed by the center (Section 34), educational institutions themselves are to provide curricular substance related to the needs of the community (Section 27). Local education authorities are to take due consideration of the effects of their actions on the provision of private education. (Section 45.)

f) Governance of schools. In terms of governance, private education institutions will have to become legal entities and be governed by their own boards drawn, inter alia, from community leaders. (Sections 44 and 40). This represents a significant change from the present, in which boards serve only advisory purposes. According to the provisions of the law, in the future individuals may not own vocational schools. Instead, the schools must be converted into special legal entities. The boards will be constituted according to specified membership drawn from the present owners, staff, parents, local community leaders and education experts. The board will then hire the manager of the school through a contract and decide remuneration. It is expected that 60 percent of all gross profits from operation of the school will be reinvested in development of the school and 40 percent would be available for distribution to the owners. The profits will not be taxed.

g) Teaching programs. According to the Secretary General, OPEC, private schools will be allowed to develop their own curricula and teaching programs. Additional flexibility is to be built into the system by ensuring that credits for study in any level and type of institution are readily transferable to others (Section 16.) In addition, the Law stresses the need for all levels and types of education to be diversified, including a balance between academic and professional subjects (Section 28). This could support a move away from specialization in pre-employment training towards more general skills useful for lifelong learning, another feature of the Law. (Section 8)

[22] It is not clear whether the average operating cost will be varied according to region to reflect different costs of living by locality; whether it will be pegged to increase according to the consumer price index; and whether it will be adjusted for size of institution (otherwise it could discriminate against schools in less populated areas.)

h) Professional standards. Another feature of the Law is establishment and raising of the professional standards of teachers. Teachers and administrators of both public and private institutions will be required to have professional licenses, except for informal education. (Section 53) Professional standards will be raised on a continuous basis (Section 9). A Fund will be established for this purpose (Section 52). State support for the academic development of private education institutions is explicitly included (Section 46.) Private education institutions for the first time will have access to state support for teacher development. Teacher salaries in private schools will be regulated more closely. All private schools must also have a salary scale in place with regular increments based on length of service.

i) Quality assurance. Establishment of standards and quality assurance is another feature of the Law for all levels and types of education (Section 9-3). Procedures must be put in place within all institutions for internal quality assurance. External evaluation is slated for all schools, including private vocational, every five years.

j) Central administration. What is not clear is how vocational training will be managed at the level of the central Ministry of Education, Religion and Culture. Presumably it would fall under the Commission for Basic Education for education and training up to grade 12, and the Commission for Higher Education for non-degree programs. Split central administration might be a complicating rather than facilitating factor. The central administrative 'home' for vocational education should be addressed in the forthcoming law on vocational education.

V. Policy Issues and Options

The new education law is bound to stimulate valuable discussion on fundamental issues related to private vocational education. How much vocational education is needed at the upper secondary level? Why provide vocational education at upper secondary level at all if graduates do not enter the labor market on completion? To what extent is the extra cost of vocational education justified compared with general education? How can public and private institutions compete on an equal footing? What will the state gain by subsidizing the costs of tuition in private vocational schools? How much de-regulation of private schools should be undertaken?

Four issues are considered below, competition, deregulation, rethinking the content of vocational education and the consequences of decentralization.

A. Competition

The new law requires that any student who wishes to pursue upper secondary education be financed by the state, and, further, that state financing be allocated on a per capita basis to both public and private institutions[23]. The voucher option will be hard on the government budget. Essentially it will substitute state financing for private financing of about 250,000 existing places in private vocational schools at the upper secondary level. On the other hand, free tuition should enable more parents to send their children to upper secondary education, and they should be able

[23] Despite free tuition, poorer students will continue to need assistance for living expenses.

to choose more freely between public and private institutions. Neither public nor private institutions will be allowed to charge tuition or other fees at the upper secondary level.

The new law and the voucher system will change fundamentally incentives for students and schools. Students can choose freely between public and private schools based on quality considerations, not costs. This could mean more students (or more able students) for private vocational schools. For schools it means strong incentives for improving quality because quality gives a school a competitive edge in recruiting new students. The consequence may be even larger schools sizes since larger schools can realize economies of scale, or consolidation of smaller schools.

However, for the voucher system to work properly, the value of the voucher must reflect actual costs. In this private institutions will still be at a financial disadvantage. The subsidy of private schools will cover only operating costs, not capital costs (buildings and equipment.) Moreover, private institutions will still be required to pay land taxes and possibly also VAT on educational equipment. The advantage for the state, of course, is that it will have to pay comparatively less to private than public vocational schools per student enrolled.

B. DEREGULATION

The benefits to the state of private education are: (a) enrollment of students at lower cost per student to the state, (b) competition for students between public and private schools that raises the quality of instruction, and (c) experimentation and innovation. Freedom to manage by private institutions is essential for each. A case can be made that private schools at present are over-regulated by the government. The managers of private institutions are not free to manipulate resources so as better to compete with public institutions. They are not free to innovate in teaching content and methods. The consequences of this over-regulation have been failure to realize potential quality improvements and expand coverage through greater efficiency (i.e. less cost per student).

The Ministry of Education plans to de-regulate private schools so that they are "more free to administer their work." This will not be automatic or easy. When private schools begin accepting public subsidies the natural tendency will be to impose more, not less, control. With financing comes strings attached, and there is already excessive control without public financing. The logic for government control of private education is compelling. It is also wrong. If private institutions are to be paid on the same basis (for recurrent costs) as public institutions, the reasoning goes, then they should have the same standards and quality. Therefore the state must ensure that state standards apply to private schools in terms of teachers, plant and equipment, curricula, class sizes, etc. Already in the new law, private institutions will be required to reorganize their governance, install teacher salary scales, etc. These are additional regulations. It is not clear what regulations, if any, will be removed. Care must be taken to ensure that implementation of the new law results in less rather than more regulation of private schools.

In the medium term it would be advisable for Thailand to shift from controlling inputs to controlling outputs, e.g. graduates who meet standards of achievement in both academic areas and practical skills. Conceivably subsidies could be paid per qualified graduate rather than per

student attending school. The government would "purchase" the product rather than subsidize the process.

C. Re-thinking the Purpose and Content of Vocational Education

The educational pyramid resembles more a "stovepipe" at the upper secondary level than a pyramid. Most students continue on to further studies. This is not bad, per se, particularly if the additional education is privately financed. However, it calls into question the purpose of vocational content and immediate preparation for the labor market at the upper secondary level. If students do not enter the labor market after Grade 12, what is the justification for the state financing the extra costs of vocational education (compared with general education) at that level? Moreover, the new law may inadvertently reinforce the stovepipe. Tuition charges will be possible only at post-secondary level. Therefore, to capture tuition income private vocational schools will have strong financial incentives to channel students from their lower certificate programs directly into their upper certificate programs.

Strategic options for Thailand are: (a) shift the balance more towards general preparation within vocational education, and ensure that skills taught are less occupationally-specific and applicable to a variety of occupations; (b) use vocational courses to enhance learning of general subjects, (e.g. the "tech-voc" approach in the U.S.), or (c) defer the skill training until the later years of vocational education at which time the career destination of students may be clearer. Of course, the profile may change as more students enroll in upper secondary education. A change of clientele may mean that more students will terminate at the end of secondary education. This would tend to reinforce the current purpose of the lower secondary certificate. It also underscores the importance of establishing and maintaining good tracer information on the destination of graduates to inform future policy choices.

D. Implications of Decentralization

One of the key stipulations of the new law is devolution of authority to 'education service areas', or local education authorities. Decentralization of curricula is also intended. Vocational schools will be allowed to develop their own teaching programs within general guidelines provided by the government. If so, it provides an excellent opportunity for the system to become more responsive to local labor markets. The challenge for private schools will be to establish close working relations with employers, a gaping weakness at present. The challenge for the state will be to achieve at least minimum quality standards throughout the system. The excellent start made on external quality assessment should be developed further, but external assessment only every five years may not provide a sufficiently strong basis for quality. A shift of focus to exit or output standards will be essential, i.e. learning achievements and skills acquisition.

VI. Annex

Private Informal Vocational Training

Informal vocational training refers to short courses (in modules typically of 30 hours duration) given outside the formal school system. The purpose of the training is to fill gaps in

preparation of post-school leavers, or to update their knowledge and skills. The clientele for informal vocational courses is broad and diverse, people from five years of age to 50 years. Some prepare for better jobs, or to upgrade their positions within employment. Others learn languages for local employment with international firms or study abroad. Examples of short courses include computer courses, language training, electronics, auto-repair, hairdressing; and dressmaking. Currently strong demand exists for computer courses and language training. One segment of the genre includes "coaching" centers to prepare students for entrance examinations at various levels, including university. Classes are often given during summer breaks and in evenings.

Informal vocational training is supervised by the Nonformal Education Division of the Office of Private Education. Programs must be registered to give courses legally to more than 7 persons per day. The steps to establish a training center include the following: (1) must be a Thai national; (2) syllabus approved by the Private Education Commission, (3) pass inspection of premises by the OPEC, including number of rooms, size, fire egress and sanitary facilities; (4) approval of qualification of teachers, and (5) payment of Bh. 1,000 for the certificate. The approval process, if the owner is experienced in the steps, takes about three months but may take up to one year otherwise. Approval is granted to operate without limit of time. The Provincial education office makes annual inspection visits, usually three persons, to check documents, teaching materials and equipment, teaching staff and facilities.

Mainly the fee levels are decided by competition. The centers for the most part set their own prices based on competition, demand and ability of students to pay. They must submit their fee structure to OPEC. Only in the case of hotel training has the fee structure ever been turned down. Competition is the decisive factor in setting fees. For example, competition is strong in computer courses and prices have dropped drastically recently. Some competition is also emerging from public vocational institutions that are opening their own evening courses in computer-related subjects.

The highest investment costs for programs are hardware and software (computer training). Also space requirements are high because classes tend to be smaller than in the formal system, e.g. 10-15 students (but are not controlled by government) meaning that more classrooms are needed per student. Teachers tend to be employed part time and cost less than comparable teachers in the formal system on a full-time equivalent basis because they do not receive provident fund, health benefits or education benefits as do civil servants. An Association of Managers and Teachers of Non-formal Vocational Private Schools exists, although it is not very active. More specific associations are being considered, such as an association for computer and language training centers.

According to OPEC, in 1998 2220 training centers existed teaching 777,000 students taught by 6,400 teachers in 68 different subjects.[24] Two subjects account for more than 80 percent of all informal training: language training with nearly 350,000 students (of which 340,000 are studying English), and computer training with about 290,000 students. Next is typing with about 60,000 students, and tutorials (examination preparation or make-up) with about 20,000 students.

[24] OPEC, 1998, Table 19, pp. 44-47.

The same financial requirements and incentives apply as for private vocational schools. That is, the owners pay no tax on profits, but do pay VAT on books, computers and other materials. They pay property tax. They are not eligible for low-interest loans. Some have taken loans at commercial rates, but this is rare.

Enrollments are also sensitive to economic cycles. Enrollments in computer courses have declined by 20 percent over the past two years and are only now beginning to pick up slightly.

Problems: The five owners and their representatives interviewed did not feel that they were overcontrolled by OPEC. Some owners felt that competition was too keen, and they had to keep lowering the prices which cut into profits. Competition is increasing with public vocational institutions that are starting to offer evening programs and short courses especially in computers. Some problems are experienced in recruiting foreign teachers (e.g. for languages) because of the relative unattractiveness of the Baht recently.

Some institutions keep output statistics through alumni associations, but gradually the training centers find it difficult to keep track of graduates.

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VIII. List of Schools and Places Visited

Surat Thani

- Don Bosco Technical School
- Surat Industrial Technical School
- Surat Technology School
- Surathani Polytechnic College

Bangkok

- Federation of Private Vocational Schools of Thailand, Dr. Werewat Wanasiri, President
- Office of the Private Education Commission, (OPEC), Ministry of Education, Dr. Charuaypon Torranin, Secretary General
- Siam Business Administration College
- Siam Institute of Technology
- Wimol Commercial School

CHANGING RETURNS TO EDUCATION IN TIMES OF PROSPERITY AND CRISIS PRIVATE VOCATION EDUCATION IN THAILAND

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I. ABSTRACT

Using data from Thailand's National Labor Force Surveys, I show that the educational composition of the labor force changed significantly between 1985 and 1998. In addition to general increases in the average number of years of education, between 1985 and 1998 the inequities in educational attainment between rural and urban areas declined.

Findings show that education had a larger impact on earnings for 24-35 year-old men and women in 1995 than in 1985, but that the impact on earnings fell between 1995 and 1998. The effect of education on monthly earnings is nonlinear. Finally, the social rate of return to both upper secondary vocational education and upper secondary academic remained high relative to completion of a lower secondary degree in all years. This is true for both males and females.

II. INTRODUCTION

Thailand's economy and society have undergone dramatic changes in recent years. Like its Asian neighbors', Thailand's GDP (Gross Domestic Product) has increased at a phenomenal rate, with growth averaging more than 6 percent between the 1960s and 1996 (Falkus 1995). Although economic growth slowed during 1997 and 1998, GDP growth has been positive since the first quarter of 1999 (The World Bank 1999), Annex I, Table 1. Developments in national economic well-being are rooted in a transformation from agriculture to manufacturing and services (Medhi 1995; Pasuk and Samart 1993; Suphat 1995). In 1960, 38.9 percent of the GDP was in agriculture. By 1990, that had declined to 12.4 percent, and in 1998 stood at 11.2 percent.

Growth has brought in new Thai and international capital investment and increased the portion of the labor force employed in factories or service industries. For example, in 1960 only 17.6 percent of the labor force was employed outside of agriculture. By 1990, that proportion had risen to 33.5 percent.

Thailand's education system has changed significantly since the 1960s. Up until 1978, the government required students to complete four years of compulsory schooling, but after 1978 required six years. This policy change in 1978 followed a period, between 1961-1978, when the Ministry of Education attempted to gradually extend compulsory schooling to seven years. However, by the time the law was changed in 1978, only 57 percent of the country's sub-district's had schools that offered seven years of compulsory schooling.[1]

Between 1960-1978, secondary education consisted of general and vocational streams. Vocational education had in principle two levels, a lower level consisting of two to three years, and an upper vocational stream of two or three years. General secondary education consisted of

two levels up until 1978, including a three year lower secondary degree and a two year upper secondary degree.

After 1978, vocational education was redefined to include an upper vocational stream, offering a parallel track to the upper secondary degree that lasts three years. The system included a higher education vocational degree stream generally considered equivalent to university and lasting between two and four years. Since 1978 general secondary education has consisted of two streams, a lower and upper secondary degree, each lasting three years.[ii]

Thailand's higher education system, divided until recently into a number of four-year colleges and approximately 30 teacher training colleges, is almost entirely controlled by the government. In addition to college and teacher training programs (now called Rajaphat Colleges), the government has a variety of specialized nursing and military schools considered equivalent to the university degree. Although the country has a few very prestigious private colleges they enroll a small percentage of university students, and only emerged in the 1980s as a serious alternative to public universities.[iii]

Thailand's government began the post-war period with a strong commitment to education and managed to achieve universal primary education in the 1980s. In 1961 only 77.4 percent of primary school age children were in school. By 1990, 99 percent of the primary school age population was enrolled in primary school. Lower secondary school enrollments grew from 13.7 percent of the eligible age group in 1961 to 37 percent in 1980, and 49 percent in 1994. Enrollment rates in higher education have grown rapidly in Thailand as well. Thai enrollment in higher education stood at 1.3 percent of the school age population in 1970, rising to 22 percent in 1994.[iv]

During the 1990's Thailand educational system has changed significantly. The most important demographic change is the dramatic increase in enrollments at the secondary level.[v] In 1997-98 the secondary school enrollment rate stood at approximately 60.3 percent, whereas as recently as 1994 the enrollments were at 49 percent (The World Bank 1999, pp. 47, Annex 3, Table 17).

In addition, the government has recently undertaken significant structural reforms, passing a new comprehensive education law in 1999 that calls for an increase in the compulsory level of schooling to 9 years and provides free education up until the 12th grade (Cresswell 1999). The law calls for structural changes matched by few countries, irrespective of level of development, including significant alterations in the management of education and an increase in the accountability requirements. For a discussion of the new law and its potential impact on Thailand's education system see (Cresswell 1999; Fry 1999).

A student progressing through the education system is faced with choices that restrict access to further schooling. The most significant transition occurs after completion of the compulsory six years of schooling (Orapin 1991). Entry to secondary schooling, although not restricted by national exams, is subject to school or cluster exams. The most prestigious public schools offer dual selection systems, taking a portion of the student body from the local area and selecting the majority of applicants through a competitive examination process. This practice

ensures that some rural and hill tribe students' have access to high quality secondary schooling (Myers and Chalongphob 1991a). However, since many high quality secondary schools are located in provincial centers, the majority of students in secondary schools are enrolled in lower quality secondary schools. Moreover, at the secondary school level, Cresswell draws our attention to the fact that there is variation among regions in the lower secondary school transition rates. The northeastern provinces have the lowest transition rates, approximately 20 percent less than those in the southern provinces. These differences, he concludes, are not due to differences in school funding formulas, and therefore must be due to some more complex social dynamic operating in the northeast (Cresswell 1999, pp. 77-78).

Access to *public* vocational education and university spaces are also subject to exams. Vocational schools are subject to exams because of the oversupply of applicants. The university entrance exam, unlike the general secondary and vocational exams, is national - and much of the instruction in upper secondary school is considered preparation for the entrance exam.[vi]

Upper secondary and vocational education both take 12 years to complete. However, while both can in practice be terminal degrees the upper secondary degree is commonly viewed as a route to college. Although only few of the upper secondary graduates actually make it to college, I suspect that most students pursue an upper secondary degree with the hope of going to college. I base this hypothesis on a number of years of teaching and research in Thai secondary schools, as well as evidence from qualitative and policy studies (Myers and Chalongphob 1991a; Orapin 1991).Vocational education, in contrast, is a terminal degree, although students can take the university exam with a vocational degree.[vii] Therefore, a comparison of the labor market outcomes of the two degrees is in effect a comparison of students who have successfully achieved their goal (vocational degree) with a group that failed to get into university.[viii] There may, therefore, be other significant differences between vocational and secondary school completers that influence the labor market outcomes.

This paper examines the premium to education in 1985, 1995, and 1998. The paper focuses on the relationship between educational attainment and earnings for 24-35 year-old workers. I answer three basic questions:

1. What was the difference in the distribution of educational attainments for 24-35 year-old Thai males and females between 1985 and 1995 and between 1995 and 1998?
2. What was the premium in earnings associated with increases in education for each of the years (1985, 1995, and 1998)?
3. What was the social rate of return to vocational and academic secondary education credentials in 1985, 1995, and 1998?

III. Data and Sampling Strategy

The data for this thesis come from the National Labor Force Survey (NLFS) for 1985, 1995 and 1998. Since 1985 the National Statistics Office (NSO) has collected the NLFS three times a year. This study uses data collected during the agricultural season and thereby is more likely to survey people who were at their permanent place of residence.[ix]

The NLFS has several advantages in studying the impact of education on earnings. First, the survey represents a continuous attempt to gather cross-sectional data since 1963. Second, the measures have remained largely unaltered, allowing analysis based on the same variables. Furthermore, the survey is a national instrument, allowing comparisons between regions and between rural and urban areas.

This analysis is limited to men and women who work full-time between the ages of 24-35.[x] The sample is restricted to individuals who work as employees in either government or private sector businesses, excluding individuals classified as employers, the self-employed, or individuals whose work is restricted to household work. The study focuses on 24-35 year-old workers because the economy has changed so dramatically over the period of study, and because one expects younger workers to experience greater changes in earnings due to shifts in supply and demand (Kim 1994; Mincer 1974; Wu 1995).

Table 1 (a & b) provides estimates of the sample means and standard deviations of the logarithm of monthly earnings (in 1995 *baht*) for men and women from the two datasets. This pattern demonstrates that monthly earnings increased during the 1980s and 1990s (Chalongphob 1993; The World Bank 1996), pp. 20. The decrease in log monthly earnings between 1995 and 1998 is also consistent with the available information. Kakwani and Pothong document a decline in earnings, which is also alluded to in the recent World Bank Monitor (Kakwani and Pothong 1999; The World Bank 1999).

Cost data for the computation of the rates of return was assembled from a study conducted in 1998 by Anthony Cresswell. All costs (direct and government) were reported in Cresswell (1999), and are based on Thai government data. The government costs include both capital and recurrent expenditures. Government costs are reproduced in Table 2. Direct household costs were measured by two surveys of 5000 households conducted by ONEC in 1997. The first survey measured the direct costs of education for individuals below university. The second survey measured the cost of education at the university level. Private costs are reproduced in Table 3.

Both government and private costs were incorporated into the computation of rates of return. All cost data were adjusted for inflation using the CPI index from the Bank of Thailand, and are expressed in 1994 *baht*.[xi] All cost data take into account differences in the cost of private and public schooling by weighting cost data by the proportion of the *current* enrollment in private or public schooling. This is preferable to simply analyzing the data for either private or public schooling because the NLFS does not differentiate between public and private schooling.[xii]

IV. Education Attenment

Table 4 summarizes the mean years of educational attainment for the sample in each given year by background characteristics (rural/urban, region), for men and women. Table 5 summarizes educational attainment by the highest level of education completed, also for men and women.

Table 4 shows a general increase in the level of education for the sample. In 1985 young men had an average of 7.8 years of education, while in 1995 this had risen to 8.2. Women's educational attainment shows the same trend. In 1985, the average educational attainment for women was 8.6 years, while in 1995 that had risen to 9.1 years. By 1998, the average educational attainment for young men was 9.2 years, and for women was 9.8 years.[xiii]

These average levels of attainment are probably higher than the average number of years of the population as a whole. The sample is limited to those working for wages, and one would assume that this sample has a higher level of educational attainment than the majority of the labor force, who work as farmers or in the informal sector.

Table 5 shows the percentage of young men and women by the highest level of education completed in 1985,1995, and 1998. Like Table 4, Table 5 shows a general increase among the sample of 24-35 year-olds in the amount of education completed, particularly at the upper primary and lower or upper secondary levels. This reflects the recent changes in the Thai educational system, particularly the increase in 1978 from 4 to 6 years in the compulsory level of education. The 1985 sample of 24-35 year-olds were born between 1951 and 1960, and therefore the last cohort would have completed compulsory schooling (four years) by age 11 or 12 in 1971 or 1972, well before the imposition of six years of compulsory education. In contrast, about half of the 1995 sample -those born after 1966/67- comes from those educated under the post-1978 system. Some of those born before 1966 from either sample could have received seven years of compulsory schooling before the law was instituted in 1978, if they were educated in a *tambol* that had reconfigured the primary education system to require seven years of schooling (Knodel and Malinee 1989).

Increases were most significant in the supply of workers with upper primary education and lower or upper secondary degrees. The percentage of the *male* sample with an upper primary education increased from 6.9 percent in 1985 to 29.2 percent in 1995, and increased to in 30.1 percent in 1998. In addition, the percentage of workers with secondary education (lower or upper) increased from 16.3 percent to 22 percent of the male labor force, and in 1998 reached 24.9 percent of the sample.

The changes for women mimic those for men for the most part. The percentage of the female sample with an upper primary education increased from 5.7 percent in 1985 to 21.8 percent in 1995. The proportion of the sample with an upper primary degree continued to increase, and by 1998, 25.9 percent of women had an upper primary degree. The percentage of women with a secondary education (lower or upper) increased from 8.2 percent in 1985 to 14.4 percent in 1995. By 1998, 20.8 percent of women had a secondary degree.

The changes are partly the result of developments in educational policy. Thailand's education ministry moved from serving lower primary and university education to an emphasis on basic and secondary education. As described earlier, the government increased the required number of years of education from four to six years in 1978. Changes in secondary education are more difficult to explain, but are probably the result of shifting governmental priorities as well. While the government decreed as early as the First National Development Plan that secondary education was going to be a priority, and reaffirmed this commitment with the Third Plan, only

in the early 1990s did the government address the very low enrollments in secondary education. To make dramatic changes in education enrollments at the secondary level the government allowed primary schools to offer secondary school courses to serve students in geographical locations that were distant from district secondary schools. In addition, the government expanded many of the lower secondary education schools to include upper secondary schools, creating greater capacity in secondary education.

The data on educational attainment by area of residence (Table 6a and 6b) shows increases in the average educational attainment for rural residents. While urban residents were more highly educated in both 1985 and 1995, the rural residents experienced greater increases in the percentage of the population with primary or secondary degrees. This is a positive finding because it shows that the government has made progress towards providing rural and urban people equal opportunities for education. It is worth noting, however, that the proportion of male urban residents with a college degree increased more rapidly than rural residents with college, continuing a long term trend in higher rates of college enrollment for those from urban areas (Myers and Chalongphob 1991a).

People living outside of Bangkok have lower educational attainment than people who live in Bangkok on average (Table 7). However, these disparities do not only represent unequal access to educational services. In addition to reflecting the differences in the supply of educational spaces, they also serve to illustrate the differences in demand for educated workers. While certain urban areas outside of Bangkok grew significantly in the 1980s and 1990s, industrial growth was still concentrated in Bangkok and the surrounding areas (Chalongphob 1993; Nipon 1995). Since the NLFS measures current labor market participants and not simply educational enrollments it reflects the current composition of the labor force. Therefore, while the data on regional differences in educational attainment reflect continuing inequalities of access to education, they also show the continuing differences in demand for educated workers that is the result of the pattern of economic development in Thailand.

V. ANALYSES

I used regression analyses to fit earnings functions for men and women in 1985, 1995, and 1998.[xiv] Earnings functions for young men and women are estimated by regressing the log of monthly earnings[xv] on years of education (and its square), rural, urban, or sanitary district residence[xvi], regional residence, marriage, work experience (and its square)[xvii], a vector of occupation dummies, and public/private employment. Sampling weights are included in the estimation of all models.

The following equation shows the hypothesized earnings function that I use in each year for the base model (Table 8, Model 1):

$$\begin{aligned}\ln(earn) = {} & \beta_0 + \gamma_1(EXP)_i + \gamma_2(EXP*SQ)_i \\ & \beta_1(EDYRS)_i + \beta_2(EDYRS*SQ)_i + \beta_3(RURAL)_i + \beta_4(SAN_D)_i \\ & + \beta_5(NORTH)_i + \beta_6(NEAST)_i + \beta_7(SOUTH)_i + \beta_8(CENTER)_i \\ & + \beta_9(MARRIAGE)_i + \beta_{10}(PUBLIC)_i + \beta_{11}(PROF)_i + \beta_{11}(EXEC)_i \\ & + \beta_{12}(CLERK)_i + \beta_{13}(TRANS)_i + \beta_{14}(AG)_i + \beta_{15}(MINE)_i \\ & + \beta_{16}(SKILL)_i + \beta_{17}(SERV)_i\varepsilon_i\end{aligned} \quad 1)$$

For each year, the hypothesized model represents the total impact of years of educational attainment on the log of monthly earnings, controlling for potential work experience (and its square), area of residence, and regional residence, marriage, private employment, and occupation. When interpreting the effects of dichotomous predictors, specifically the effects of the education dummies, regional, and rural/urban variables I use the anti-logged regression coefficients minus one $(e^{\beta}-1)$ to summarize the percentage difference in monthly earnings between people for whom the dummy was coded zero and coded one. However, for the years of education (EDYRS) and years of work experience (EXP) variables one can not simply take the antilog of each coefficient, since I also include quadratic versions of these predictors. In these cases, the premium to years of education or experience varies by the level of education or experience.

For example, to describe the impact of years of education on the log of monthly earnings, I compute the predicted log monthly earnings at different levels of education or experience and compare them, thereby allowing the value of both the linear education term and the quadratic term to vary.

Subsequently, I estimate regression models that substitute a set of educational dummy variables for the years of education variable (Table 8, Model 2). These results were used to compute the internal rate of return to vocational and academic education in 1985, 1995, and 1998. The following model was estimated separately for women and men.

$$\begin{aligned}\ln(earn) = {} & \beta_0 + \gamma_1(EXP)_i + \gamma_2(EXP*SQ)_i \\ & + \beta_1(NOSCH)_i + \beta_2(S_LP)_i + \beta_3(LP)_i + \beta_4(S_UP)_i + \beta_5(S_LS)_i \\ & + \beta_6(LS)_i + \beta_7(S_US)_i + \beta_8(US)_i + \beta_9(S_UV)_i + \beta_{10}(UV)_i \\ & + \beta_{11}(PS_V)_i + \beta_{12}(PS_A)_i + \beta_{13}(COLL)_i + \beta_{14}(MO_COLL)_i \\ & + \beta_{15}(RURAL)_i + \beta_{16}(SAN_D)_i \\ & + \beta_{17}(NORTH)_i + \beta_{18}(NEAST)_i + \beta_{19}(SOUTH)_i + \beta_{20}(CENTER)_i \\ & + \beta_{21}(MARRIAGE)_i + \beta_{22}(PUBLIC)_i + \beta_{23}(PROF)_i + \beta_{24}(EXEC)_i \\ & + \beta_{25}(CLERK)_i + \beta_{26}(TRANS)_i + \beta_{27}(AG)_i + \beta_{28}(MINE)_i \\ & + \beta_{29}(SKILL)_i + \beta_{30}(SERV)_i + \varepsilon_i\end{aligned} \quad 2)$$

A full description of the variables used in this model are in Annex 1, Table 1. Model 2 replaces estimates for years of education with estimates for specific education credentials. The returns to education are expressed as returns to completion of a particular education credential. I use the anti-logged regression coefficients minus one (e^{β}-1) to summarize the percentage difference in monthly earnings between people for whom completion of the particular education dummy is coded one and those who finished upper primary education.

VI. Results

Table 9 presents estimated regression coefficients and associated standard-errors for the fitted models in the three sub samples of males. Table 10 presents the comparable estimates for females. These tables display results from model 1. Results for model 2 are displayed in Table 11 and 12.

Section 5(A) outlines the regression results based on Model 1, while Section 5(B) reviews results based on Model 2.

A. Changes in the Payoff to Education Over Time

a. Years of Schooling

The fitted models presented for women and men show that, controlling for experience and its square, area of residence and region, that educational attainment does have a role in predicting earnings. Since the dependent variable is a quadratic term a graphical representation lets you see the impact of years of schooling on earnings. Figure 1 plots the predicted log of monthly earnings for different levels of education for men living in Bangkok in 1985, 1995, and 1998. In 1985, for example, men with an average level of education (7.8 years) had predicted log monthly earnings of 8.2. In 1995, as one can see in Figure 1, earnings had increased significantly for men at all levels of educational attainment. In 1995, men with an average level of education (8.2 years) earned predicted log monthly earnings of 8.5.

Figure 2 plots the predicted log of monthly earnings for female Bangkok residents at different levels of education. In 1985, for example, women with an average level of education (8.6 years) had predicted log monthly earnings of 8.0. In 1995, similarly, earnings increased for women at all levels of schooling. For women with an average level of education in 1995 (9.0) predicted log monthly earnings were 8.4.[xviii]

For men and women, however, the effect of additional years of education on log earnings is not linear. Workers completing an additional year of education at the higher levels of education are rewarded more (in percentage terms) than workers completing an additional earlier year of education. This is demonstrated graphically by the difference in the slope of the regression line at different levels of education in both 1985 and 1995 (Figure 1 and Figure 2).

Figure 1 can be divided into three regions. In the range of 0-8 years of education, an additional year of education leads to a smaller log earnings differential in 1995 than in 1985. For men with between 9-14 years of education, log earnings differences associated with an additional year of education are about the same in 1995 as in 1985. However, within the range of 15-20

years of education, the increase to log earnings per year of education is greater in 1995 than in 1985.

Figure 2 can be divided into two regions. For women with between 0-7 years of education an additional year of education leads to a smaller log earnings differential in 1995 than in 1985. For women with between 8-20 years of schooling, however, the increase to log earnings per year of education is about the same in 1985 and 1995.

What happened in 1998? Table 9 shows the estimated regression coefficients and associated standard errors for the fitted models for men from Bangkok in 1998. Table 10 contains comparable estimates for women from Bangkok in 1998.

Figure 1 plots the predicted log monthly earnings by level of education for 1985, 1995, and 1998 for men. Men with an average level of education in 1998 (9.2) had predicted log monthly earnings of 8.4. Figure 2 plots the predicted log monthly earnings by level of education in 1985, 1995, and 1998 for women. Women with an average level of education in 1998 (9.8) had predicted log monthly earnings in 1998 of 8.4.

There are at three interesting findings to point out based on figures 1 and 2.

1. First, the differences in earnings due to education between 1995 and 1998 actually dropped at each level of schooling for men and women, except the lowest levels;
2. Second, the change in differences due to education is most substantial for those with approximately 7-16 years of education (this differs slightly for men and women);
3. Finally, the decline in earnings for those with both secondary and post-secondary education appears roughly the same.

These findings – including the general reduction in real earnings – are similar to those from other researchers. Kakwani and Pothong (1999: 35) pointed out that real income among men and women dropped during 1998. They also stress that earnings for men dropped more significantly than for women. These findings are also consistent with those looking at the impact of the economic crisis in Indonesia, where findings from the IFLS surveys show a larger decline in male earnings than in those for women.[xix]

Clearly, given the economic crisis in Asia between 1995 and 1998, looking to the demand side to explain part of the change in earnings makes sense. Thailand's GDP growth was –9.4% in 1998 (The World Bank 1999), Annex 4. Other authors have drawn attention to the change in economic activity to try and explain changes in earnings (Kakwani and Pothong 1999).

As to why the differences in earnings were greatest for those with secondary or higher education, I would speculate that this had something to do with the differential impact of the economic crisis on economic sectors that employed semi-skilled or professional workers. Kakwani and Pothong draw our attention to the fact that real income was down most significantly for those in the manufacturing and service sectors, as well as the agricultural, mining, and trade sectors (Kakwani and Pothong 1999), pp. 58.

b. Work Experience

Tables 9 and 10 also show the impact of potential work experience on log monthly earnings in 1985 and 1995 for women and men, respectively. The fitted model shows that, controlling for years of education and its square, area of residence, and region of residence, that years of work experience have a generally positive effect on log monthly earnings.

Figure 3 displays the predicted values of log monthly earnings by level of potential experience for men in all three years. It shows that earnings were impacted by level of potential work experience in 1985, 1995, and 1998. Furthermore, it demonstrates that the impact of experience on log earnings is non-linear. Additional years of experience have less of an impact on log earnings for workers with more years of experience, as can be seen from the differences in the slope in Figure 3 at different levels of experience.

For men the experience-earnings profile shown in Figure 3 is flatter in 1995 than in 1985. Figure 3 can, however, be divided into at least two regions. For the range of experience between 1-14 years, the increase to log earnings per year of experience is less in 1995 than 1985. In contrast, for the range of experience between 15-29 years, the increase to log earnings per year of experience are roughly the same in 1985 and 1995. For women, the experience-earnings profile does not appear flatter between 1985 and 1995.

The experience-earnings profile for women is substantially different than for men (Figure 4). In 1985 and 1995 the affect of experience on log monthly earnings appears roughly the same, although the impact of an additional year of experience on log earnings increased. The profile in 1998, however, shows the non-linear affect of experience on earnings. In 1998, in contrast to 1995 or 1985, women with all levels of experience saw a decrease to the affect of experience on earnings. This decrease is most substantial for those with approximately 14 years or more of experience.

c. Area of Residence

Thailand has historically had clear differences between the earnings of rural residents and those living in either urban or sanitary areas. The NLFS data show that earnings of rural residents were below those living in either sanitary districts or urban dwellers in each of the years. These findings from the statistical analysis should be treated with caution, as the standard errors on the rural dummies are statistically significant for women in 1995 and 1998, but not in 1985. For men, only the rural dummy in 1998 is statistically significant at the .05 level.

d. The Effect of Region of Residence

The analyses demonstrate increasing earnings differentials between the regions. In all three years, residence in a region outside of the capital (south, north, northeast, and center) is associated with lower monthly earnings. The standard errors on the individual region variables indicate that log monthly earnings in each region are different from earnings for Bangkok in each year.

The effect of residence outside of Bangkok had a sharper negative impact on earnings in 1995 than in 1985 for both men and women. These findings support the research conducted by Medhi and others using the Socio-Economic Surveys, which show that per-capita household income grew quickest in Bangkok and more slowly in the northeast and north between the late 1980s and early 1990s (Medhi 1993; The World Bank 1996).

The data from 1998 shows that the earnings differences between residence outside of the capital and Bangkok narrowed between 1995 and 1998 for men. Residents of the center and the south saw the difference between their earnings and those from Bangkok decrease the most. In contrast, for women the difference in earnings between regions in 1995 and 1998 is more varied. Between 1995 and 1998 residents of the North and the Northeast saw the difference between their earnings and Bangkok decrease. Residents of the south and the center, however, saw the earnings differences increase between 1995 and 1998.

e. Public/Private Sector of Employment

Model 1 also demonstrates the impact of public sector employment on earnings, controlling for years of education, area of residence, region of residence, experience, and occupation. The statistical results show the continuing premium to private sector employment for men and women. In comparing the coefficients across the three years for men and women notice that the standard errors on the public employment variable are only statistically significant in 1998, in comparison to employment in the private sector.

f. The Impact of Occupation

Model 1 also demonstrates the impact of occupation of employment on earnings, controlling for years of education, area of residence, region of residence, experience, and public/private sector employment. The results of this analysis demonstrate that the impact of occupation on earnings appear to depend substantially on the type of occupation. The omitted category in this analysis is Trade. Workers with either a professional or executive occupation tend to have higher earnings than those in trade occupations. In contrast, people in agricultural occupations earn less than those in trade.

B. RETURNS TO EDUCATION USING DICHOTOMOUS PREDICTORS

Model #1 uses a continuous predictor, years of education, to represent the payoff to schooling. The results from this analysis give a broad picture of the trends in the relationship between education and earnings in Thailand. However, in order to compute results that are more informative of particular policy questions I substituted a set of education dummy variables for the continuous education predictors. The education coefficients produced from the regression analysis in Model #2 produces an estimate of the return to education if the assumption is made that costs are limited to forgone earnings. These coefficients can be converted into percentage differences accruing to holders of particular educational credentials. Tables 11 and 12 display the results of this regression analysis for men and women respectively.

The regression coefficients produced by Model #2 do not incorporate educational costs, and therefore do not tell us about the social returns to particular educational investments. Therefore, using the results from the regression analysis in Model #2 I computed private and social rates of return to education using the "Full" method (Bennell 1996b; Psacharopoulos 1994). Using this method I incorporate both private and government costs in education, and thereby provide rates of return, helping to facilitate the determination of the utility of investing in vocational or academic education.

Rates of return should be used with caution when making a decision about which level of education to support. There are a number of recent studies that question the use of ROR, pointing out the empirical problems that many ROR studies contain, and question the utility of using such limited amounts of information in making policy decisions (Bennell 1996a; Bennell 1996b; Lauglo 1996). In particular, analysts prefer the "full" method over the traditional Mincer model which only includes costs of forgone earnings (Mincer 1974). The full method itself contains risks which can bias the rates of return. The single most important consideration is the use of rates of return in making policy decisions. The issue is that rates of return must be integrated with other sources of labor market data, especially when considering the tradeoff between vocational and academic education (Middleton 1988; Middleton and Ziderman 1997).

a. Returns to Education

Model #2 includes a set of predictors representing different educational credentials. The model includes a set of education dummies representing the highest level of education completed. We are particularly interested in the coefficients on the upper vocational, upper secondary, post secondary vocational, and post secondary academic schooling (Table 11 and 12). For each variable, the point estimates are statistically significant at the .05 level, indicating that the coefficients on vocational and academic schooling are different from the estimates for upper primary education. The coefficients on the control variables (experience, marital status, area and region of residence, public employment, and occupation) are similar to the estimates for Model 1.

Interpreting the education coefficients in Model 2 requires that I use the anti-logged regression coefficients minus one $(e^{\beta}-1)$ to summarize the percentage difference in monthly earnings between people for whom completion of the particular education dummy is coded one and those who finished upper primary education. Table 13 shows the results of this transformation for men and women. For example, the predicted difference between upper vocational education completers in 1985 and upper primary graduates was 84.3%. In contrast, in 1985 upper secondary education graduates predicted earnings were 56.8% higher than those for upper primary school graduates with similar characteristics.

Table 13 shows that the predicted percentage difference between upper vocational schooling and upper primary is larger than between upper secondary and upper primary. The magnitude of the premium to vocational education differs in each of the years. For men, in general, the percentage difference for vocational education is greater in 1985 than in 1995, while for women the difference increased substantially between 1985 and 1995, and subsequently fell to its earlier level in 1998.

Men and women who complete a post-secondary academic or vocational degree have predicted earnings substantially higher than upper primary graduates. For both men and women the post-secondary vocational certificate offers greater payoff than the post-secondary academic degree in all years. However, the premium to a post-secondary vocational or academic degree declined between 1985 and 1998 for both men and women.

b. The Internal Rate of Return to Vocational and Academic Education

As mentioned earlier, while the coefficients on the education dummies in Model 2 can be interpreted as "private" returns to education, they do not answer the critical question about the social return to schooling because they do not incorporate governmental or private expenditures on education.

Table 14 summarizes the private rates of return to vocational and academic schooling using the estimates in Model 2 (Table 11 and 12). These estimates are the annualized coefficients to education. The social rates of return in Table 12 show that the rates of return to an upper secondary or upper vocational degree increased between 1985 and 1998. The trend between 1985 and 1995 seems to indicate a rapid increase in the social rate of return to an upper vocational education for both men and women. While the same trend continued between 1995 and 1998 for women, the social rate of return to vocational education for men was the same in 1995 and 1998.

Similarly, between 1985 and 1995 the social rate of return to an upper secondary degree increased for both men and women. Between 1995 and 1998, the social rate of return to upper secondary schooling continued to increase for men and stayed the same for women.

Using the social rates of return as a decision rule, academic and vocational schooling appear to offer similar payoff to investment in education. Historically, vocational education appears to offer a stronger return, but the difference between the return to upper secondary and upper vocational schooling decreased between 1985 and 1998. For women, in contrast, academic secondary education offers a higher return in 1998.

These findings on the rate of return to education differ from those reported from the NEC, however they dffer only in terms of magnitude. The most recent calculations of the rate of return to vocational education show that the private rate of return to vocational education was 9.4 percent in comparison to 3.2 percent for an upper secondary credential ((National Education Commission 1994), cited in (Moock 1996)). Without better information about how these rates were calculated I can not explain the differences in the findings.

However, one way to check the validity of the findings is to look at the social rate of return to post-secondary education, comparing post-secondary vocational and academic. In this case, the findings confirm those from the secondary level. Post-secondary vocational schooling offers higher social returns in 1985 for both men and women and for men in 1995. But in 1995, for women, and in 1998 for both men and women, academic post-secondary education offers a higher return than post-secondary vocational education.

C. Explaining the Findings

In general, the payoff to formal education in Thailand accelerated in the 1980s and 1990s. Policy studies from the 1990s typically noted that there was a dramatic shortfall of workers with training beyond an upper primary degree (Chalongphob and Yongyuth 1996; Myers and Chalongphob 1991b). Because of this lack of training, analysts decided that the rate of return to secondary education, including lower secondary and upper secondary must be rising in the 1990s. Scholars also pointed to the increases in the transition rates from upper primary to lower secondary as evidence that families/students were demanding more education because of this increase in the return to schooling (Myers and Chalongphob 1991a; Orapin 1991). Analysts also determined that the demand for vocational education graduates was increasing, and the persistent educated unemployment experienced by vocational graduates was finally decreasing (Myers and Chalongphob 1991a; Nongram and others 1990).

Findings from my study confirm the general trend for upper secondary and upper vocational education. Between 1985 and 1995, the payoff to both academic or vocational education (as measured by the social rate of return) increased. From 1995 to 1998, in contrast, the rate of return to upper vocational education or upper secondary education increased or stayed the same for both men and women. The rate of the change occurred at the same time as the proportion of men and women with an upper secondary degree increased substantially, and the proportion of those men with an upper vocational degree stayed about the same (See Table 5). The proportion of women with an upper vocational certificate more than doubled between 1985 and 1995 (from 2.6 percent in 1985 to 5.4 percent in 1995) and grew 31 percent between 1995 and 1998. Therefore, based on a traditional supply-demand framework, we would expect to see the returns to secondary education decline if there had not been an increase in the demand for secondary educated workers that in turn pushed the earnings of secondary educated workers up.

Changes in the returns to post-secondary education offer slightly different evidence of changes in the returns to education in Thailand. For women, the returns to both vocational post-secondary and academic post-secondary increased between 1985 and 1998. In contrast, for men the payoff to post-secondary academic schooling increased while the payoff to post-secondary vocational decreased between 1985 and 1995, or 1995 and 1998. However, the traditional supply/demand framework for explaining differences in the returns to education fails to take into account a number of important factors in explaining how the returns to education could be increasing, and specifically why the returns to vocational education (particularly vocational secondary education) might be higher than for upper secondary schooling at particular points in time. In the following section I outline two different ways that vocational and academic education might offer different types of preparation that would influence the economic outcomes of schooling.

a. Differences in Curriculum and Training

Secondary and vocational graduates could differ in personal characteristics that impact earnings either directly, or through education. Based on the available information, I cannot describe individual differences between vocational and general students. Neither the National Labor Force Survey nor the interviews I conducted allow a description of personal differences

between graduates. Neither of the data sets includes measures of skills, such as test scores, typically utilized to show differences in ability.

However, the available data do allow me to describe the differences in curricula between vocational and secondary education. Although both the upper vocational degree and the upper secondary certificate take three years to complete, the curricula are quite different, particularly in terms of access to skills training that might be valuable in the labor market. The secondary education and vocational education curricula offer substantially different types of preparation for the world of work, possibly leading to different earnings.

Thailand's current upper vocational system was established in 1978 and offers a three-year degree equivalent to general upper secondary education. Vocational schooling is provided by both state-run and private institutions. A network of state-run schools is administered by the Department of Vocational Education in the Ministry of Education. Teachers generally come from the government civil service. However, a substantial proportion of vocational education is provided through private schools. In 1992, of the 446,993 students enrolled in the upper vocational education certificate, 51 percent were from private institutions (Educational Planning Division 1992).

The upper vocational curriculum offers specialized training in five major curriculum areas: industry, agriculture, commerce, home economics, and arts and crafts. These five fields each encompass more specialized training in a specific area. For example, the industry field offers training in welding, electronics, auto mechanics among other topics. Curriculum areas are revised periodically depending on the needs of the labor market (Boonchuay and Siaroon 1995).

The upper secondary level, in contrast, takes three years and requires each student to study five fields: Thai language, social studies, health education, foundations of vocational education, and science. In addition, the upper secondary degree offers training in eight different elective areas, including Thai language, foreign languages, psychology, health, art, science, math, and career education. The curriculum for the upper secondary area is designed as preparation for the national college entrance exam and therefore is highly prescribed. Although schools in theory are allowed to adapt the curricula to the needs of the local area, the teachers and students are focused on preparing students for the university exam (Boonchuay and Siaroon 1995).

Upper secondary schooling is provided throughout the country at government run secondary schools administered by the Department of General Education. Unlike vocational schooling, the general secondary diploma is almost exclusively offered through the network of government-run schools. Of the almost 500,000 students enrolled in upper secondary schools in 1992, only 6 percent were in private schools (Educational Planning Division 1992).

Thus, general and vocational education offer different types of preparation for the labor market. While vocational schooling is primarily offered in the context of specific skills training designed to train for the needs of the labor market, upper secondary schooling is considered preparation for the university entrance exam. In addition to these substantive differences in curricula, just over half of the vocational education is supplied through a network of private

schools. The number of private schools in vocational education suggests the possibility that differences in the impact of education on earnings are due at least in part to the differences between private and public schools in Thailand.

Over time, the proportion of secondary education enrollment in private schools has been declining, while the proportion of vocational enrollees in private school has been increasing (Myers and Chalongphob 1991a). Currently, 35.8 percent of upper vocational education is offered through private schools, while only 4.2 percent of general secondary enrollments are in private schools (Johanson and Werawat Wanasiri 1999). A recent paper by Johanson and Werewat demonstrates that there are few differences between vocational schools run by the government and those operated by the private sector in terms of curricula or educational programming (Johanson and Werawat Wanasiri 1999). However, there still could be differences in student background or the ways in which employers treat graduates from private vocational schools. Some of these differences were spelled out by Myers and Chalongphob in 1991, when they showed how the RTI (Ratchamongkol Institute of Technology) programs worked closely with employers through employer/faculty advisory councils as well as in-plant training of students (Myers and Chalongphob 1991a).

Although students enroll in an upper secondary degree program in order to prepare for the university entrance exam, only a very small proportion of the country's high school graduates make it to college. If they fail the university entrance exam, and also fail to be admitted to the network of Teacher's Colleges, there is no national system to facilitate the entrance of secondary graduates into the labor market. Those men in the labor market with a secondary degree probably are those who failed to gain entrance to university. Therefore, any comparison between men with secondary and vocational degrees is effectively a comparison between those who made it through the vocational education because they selected the vocational degree, and a group of students who completed secondary schools and were not able to get into university.

b. Differences in Social and Economic Context

In 1996 I completed a series of interviews with students and administrators from secondary education programs run by the Department of Nonformal Education. These interviews were completed with the intention of identifying ways to describe the background of the students, their experiences with secondary education and plans for further education, the type of work they did, and the social networks they used to get their jobs. Though the interviews did not take place with vocational students they do clearly identify some potential factors that could be contributing to the economic advantage that vocational students have over secondary education graduates.

Vocational graduates may be disproportionately drawn from urban areas, and from families with higher education and earnings, or be connected more often to social networks that enable them to get and advance in higher wage jobs than general secondary education graduates. Evidence for differences in the backgrounds of vocational and secondary graduates comes from the NLFS, which allows us to describe the social background for each group. Table 6 (a & b) shows the highest level of education attained by rural and urban residence. As one can see from the table, a greater proportion of male urban residents than male rural completed vocational

degrees, although the differences narrowed over time. In 1985, while 11.3 percent of urban residents had an upper vocational degree only 3.6 percent of rural residents did. Similarly, in 1995, 12.0 percent of urban and 4.1 percent of rural residents had an upper vocational degree.

In comparison, the proportions of urban and rural residents completing an upper secondary degree were closer. In 1985, 4.9 percent of urban and 2.7 percent of rural residents completed an upper secondary degree. In 1995, the proportion of urban residents with an upper secondary degree grew to 7.7 percent, while the number of rural residents with an upper secondary degree stood at 5.5 percent.

Living in an urban area not only gives one access to significantly higher wages, but also gives access to other benefits that might influence the relationship between education and earnings, such as social networks that are not as replicable in rural areas. For example, in one of the case studies in the dissertation I tell the story of Sirilak, who works and lives around an industrial estate on the eastern seaboard. She is able to get and change jobs in that area at least partly because of the connections she has established with other workers and employers - thereby giving her the opportunity to advance in employment. In contrast, in a rural area like Mae Ai where wage sector opportunities are largely unavailable, the value of education, particularly the impact of specific vocational training that is only used in particular fields, would be less apparent. I draw attention here to a second case study, with a male graduate in rural north - where I found that he had relatively few opportunities to develop social networks or mentors to use in advancing in the world of work.[xx]

The causes for this difference are impossible to determine definitely, but it leads to some interesting speculation about the differences between local labor markets in more urban areas such as Rayong and very rural areas like Mae Ai. It would seem that semi-urban areas such as Rayong with their highly varied labor markets would provide students with concrete examples of the effect of education on career opportunities and earnings, thereby inspiring students to pursue education. In contrast, in a rural area like Mae Ai where wage sector opportunities are largely unavailable, the value of education, particularly the impact of specific vocational training that is only used in particular fields, would be less apparent. I draw attention here to a second case study, with a male graduate in rural north - where I found that he had relatively few opportunities to develop social networks or mentors to use in advancing in the world of work.

I want to emphasize that these explanations, while interesting, are based on reasoned argument and basic interview research - not on systematic qualitative inquiry that it would demand. But I felt that in order to help explain the differences in the returns to education it is necessary to discuss factors that I was not able to include in the quantitative study. It is simply not possible to accurately describe such a complex process as the relationship between education and earnings without looking at individual experience, and describing processes that are sociological and anthropological in nature.

VII. Conclusion and Policy Implications

A. Conclusions

Thailand's economy and society underwent profound changes after the 1960s. Fundamental changes happened not only in overall economic activity as measured by Gross Domestic Product, but in specific sectors such as manufacturing and services, which required substantial changes in human resources.

One statistic that illustrates the significance of the changes is the proportion of the labor force employed outside of agriculture. The proportion of the labor force working outside of agriculture increased from 17.6 percent in the 1960s to 33.5 percent in the 1990s. These changes were accompanied by an increase in the proportion of workers using the informal labor market for employment, as well as increases in the number of people engaging in temporary migration for employment.

Important changes also took place in the education system. The government invested heavily in higher education in the 1960s and 1970s, and shifted its focus to primary education in the 1980s. Only in the 1990s did the government attempt to increase secondary education enrollment significantly.

This paper studies the breadth of changes in educational attainment and the returns to education between 1985 and 1998. Using data from the National Labor Force Survey I studied the changes in educational attainment and returns to schooling for young men and women in the labor force. The principal conclusions follow.

Between 1985 and 1995 Thailand experienced significant changes in the educational composition of the young male and female labor force. Overall, the mean years of education completed by men increased from 7.8 in 1985 to 9.2 in 1998. For women, the average educational attainment of the increased from 8.6 to 9.8. Increases in the overall level of education were due primarily to growth in the proportion of workers with upper primary education and secondary degrees.

Rural residents had on average lower educational attainment than people from urban or sanitary districts in all three years. Male rural residents' average educational attainment was 6.7 years in 1985, 7.3 in 1995, and 8.1 in 1998. In contrast, urban men had an average of 8.9 years in 1985, 9.5 years in 1995, and 10.5 in 1998. Women experienced comparable increases in educational attainment in both the rural and urban areas.

However, between 1985 and 1995 the inequities in educational attainment between rural and urban areas declined. In other words, in 1995 the difference in educational attainment for rural and urban workers was narrower then in 1985. Similarly, the differences in mean years of education between Bangkok and the mostly rural regions (North, Northeast, South, and Center) also narrowed substantially between 1985 and 1995. Between 1995 and 1998 both the rural and regions outside of Bangkok moved closer to the capital in terms of average educational attainment.

The increases in average educational attainment, along with the growth in enrollments in specific educational credentials, demonstrate the effectiveness of government national economic and development policy. The fact that the proportion of young men with secondary or primary education increased faster than those with vocational or higher education is a function of the emphasis in the educational policies in the 1960 and 1970s which tried to increase enrollments in basic education.

Based on the general increase in the supply of educated men in the labor market we should expect the payoff to education to have declined, unless other changes occurred in the labor market that would cause wages to increase. In fact, average earnings for men increased between 1985 and 1995, and although they declined between 1995 and 1998 did not drop to their earlier level. However, the effect of education on earnings differed somewhat between 1985 and 1995. For those with between 0-8 years of education, the increase to log earnings per year of education decreased between 1985 and 1995. For those with between 8-14 years of education the increase to log earnings per year of education are roughly the same in 1985 and 1995. In contrast, for those men with more than 14 years of education the increase to log earnings per year of education was greater in 1995 than in 1985. The results for women are slightly different. Between 1985 and 1995, the payoff to an additional year of schooling dropped for women with between 0-7 years of education, while remaining approximately the same for those with between 8-20 years.

In comparing 1995 to 1998 we come to a slightly different conclusion about the non-linear impact of educational attainment on earnings for both men and women. Between 1995 and 1998 the most important findings is that at all but the lowest levels of education the payoff to education declined. Second, that the change in differences is most substantial for those with approximately 7-16 years of education.

These conclusions about the impact of education on earnings must be qualified because of the limitations of the NLFS data set. The sample used for this dissertation incorporates only those who work in the formal sector, particularly those who earn wages. By necessity, therefore, it excludes the majority of men and women aged 24-35 who work as farmers. The conclusions about the impact of education on earnings can be generalized to the population of wage earning men or women, but not to those who do not work for wages.

To understand how the value of education in Thailand changed between 1985 and 1995 we need to examine more closely the relationship between the particular educational credentials and monthly earnings. Findings from my study confirm the general trend for upper secondary and upper vocational education. Between 1985 and 1995, the payoff to both academic or vocational education (as measured by the social rate of return) increased. From 1995 to 1998, in contrast, the rate of return to upper vocational education or upper secondary education increased or stayed the same for both men and women.

The regression analysis confirms earlier research showing that rural men earn less than urban men, but also demonstrates that the differential declined between 1985-1995 for men and between 1995-1998 for women. Rural men saw earnings increase more than urban men between 1985 and 1995, narrowing the differences in earnings. In 1985, rural men's earnings were 4

percent lower than urban men's, while in 1995 rural men experienced only a 3.7 percent difference in monthly earnings. This amounts to a positive change of 8.7 percent between 1985 and 1995. Between 1995 and 1998, however, the difference between rural and urban earnings increased, probably because the economic crisis disproportionately impacted rural residents. For women, in contrast, the difference between rural and urban earnings increased between 1985 and 1995, while the difference narrowed between 1995-1998. These results seem to indicate great variability in the impact of rural residence on earnings for men and women.

Thailand's historically high earnings differentials between residents of the predominately rural regions (North, South, Northeast, and Center) and Bangkok grew wider between 1985 and 1995 for both men and women. This increase in the disparity in regional earnings fits with the patterns of development in Thailand. Since the 1980s the majority of the rapid growth in the industrial sector has remained concentrated in and around Bangkok (Nipon 1995).

B. Policy Implications of Research on Secondary Education in Thailand

Scholars, policy analysts and decision makers in the Thai government have in recent years worked hard to ensure that the government makes sufficient investment in secondary education.

A 1996 World Bank report on Thailand advocated for increased investments in secondary education:

> ...policies should be directed at reducing the main supply-side constraint on the labor market, which remains the lack of adequate education for almost half the population who leave school without completing junior secondary school." *(The World Bank 1996), pp. 25*

This statement echoed findings from Thailand's Seventh National Social and Economic Development Plan, which called for dramatic increases in secondary education attainment as well as the results of a major assessment of Thailand's human resource development done by Harvard's Institute for Economic Development and Thailand's Development Research Institute (Myers and Chalongphob 1991b). These policy documents called increases in lower secondary education attainment, on which the Thai government has made significant progress.

However, the new National Education Act calls for equal access to 12 years of basic education.

> *In the provision of education, all individuals shall have equal rights and opportunities to receive basic education provided by the State for the duration of at least 12 years. Such education, provided on a nationwide basis, shall be of quality and free of charge.*[xxi] – *National Education Act, 1999*

The government, therefore, is faced with a strategic decision, to invest in vocational education or academic secondary education to develop the additional capacity to provide all students access to 12 years of schooling. Regardless of the choice the government makes, in both cases the government will need to ensure that it makes changes in the design of secondary schooling so as to maximize the benefit.

The evidence from this study helps to deepen our understanding of some of the problems and prospects for secondary education in Thailand in the 21st Century. However, given the potential problems pointed out earlier of investments in traditional vocational education, it would be inappropriate to simply make a judgment about the appropriateness of investment in either vocational or secondary schooling based on rates of return (Bennell 1996a; Bennell 1996b). Rather, as other planners and researchers have pointed out, the government should consider evidence of economic effectiveness alongside of other kinds of information, including labor market studies and evidence from the education literature.

There is no question that Thailand does need to expand the average level of educational attainment among its population. This is important for continued development of a broader range of industrial development. And, based on the economic evidence presented in this paper, investments in higher levels of education will pay off in greater private or social returns. However, based on this review of the evidence about the payoff to education in general and the returns to secondary education certificates in particular, I would offer the following thoughts about the way the expansion should proceed:

a. Quality and Quantity

The estimates in Cresswell's report to the ADB projects that Thailand will need about 3.0 million places in lower secondary schooling and almost 1.8 million more places in upper secondary level by 2005 in order to meet the demand for expanding secondary school to 12 years. Clearly, the easiest choice for the government would be to 1) use the model of the expanded schools to offer upper secondary or upper vocational schooling through ONPEC and further expand the number of primary schools offering secondary courses. This model would take advantage of the existing infrastructure. 2) A modification of this model would seek to build upper secondary school programs on top of the existing network of lower secondary schools, or to add additional capacity to vocational schools.

Based on the limited evidence from this paper I would argue that the success of any alternative depends significantly on the development of more effective secondary schooling, both in the existing system of schools and in whatever the new system looks like. While the returns to education at the secondary level are high, the evidence from this paper and other research indicates some systematic weaknesses that need to be dealt with to improve the quality of secondary education overall.

- Academic secondary education is oriented towards college, and one might argue that students go through secondary school to have the option of continuing on to college. Others have pointed out that there are also high continuation rates from upper vocational to post-secondary vocational (Johanson and Werawat Wanasiri 1999; Moock 1996). Given the high transition rates, the Thai government might begin to effectively think of planning for secondary and college level courses of training together. This form of planning, whether done as K-16 or 9-14, would force the different educational systems to create common educational objectives and work with employers as a unified front. A number of U.S. states, particularly Oregon, have already accomplished this task.

- There are certain structural weaknesses with secondary and vocational education, including lack of employer involvement, which are difficult to bring about by national policy action. However, there are certain practices that the government can promote, maybe through a grants program to local schools and businesses, to facilitate the development of local webs of business involvement in schools.

b. Build High Schools Focused on School and Work

Economic growth in Asia is on the upswing again. The current Monitor shows that manufacturing and services are driving the increases in GDP. Globally, employers are calling for more skilled workers. These cries for more employees are rooted in the convergence of the types of economic growth in different countries. Skill requirements are rising in response to global economic changes: firms must stay competitive to survive, and that depends on having workers with the proper skills. In general, that means entry-level workers who are literate and who have "the new basic skills."[xxii]

The New Basic Skills[xxiii]

The ability to read at the ninth-grade level or higher
The ability to do math at the ninth-grade level or higher
The ability to solve semi-structured problems where hypotheses must be formed and tested
The ability to work in groups with persons of various backgrounds
The ability to communicate effectively, both orally and in writing
The ability to use personal computers to carry out simple tasks like word processing

What does this mean for secondary schooling? There is an increasing commitment in countries around the world to a new form of secondary schooling which is built on the principles of "school-to-work." School-to-work in the U.S. is for college bound youth and provides both education in the required academic (and technical) skills necessary to succeed in higher education as well as the exposure and conscious practice of a set of career competencies. School-to-work programs in the U.S. differ from those in Japan and Germany, the two most commonly cited examples of successful transition systems. In Germany the school-to-work system revolves around large-scale managed training programs that facilitate the entry of technically trained students into the labor market (Rauner 1998). Japan's schools and employers, in contrast, rely on relationships at the level of each individual school. These networks ensure jobs for graduates of particular schools and serve to reinforce the economy wide lifetime employment system (Kariya and Rosenbaum, 1989).

The U.S. solution, embodied for example in the 1994 "School-to-Work Opportunities Act" focused on developing three components as the basis for a school-to-work system (OECD 1999; Rosenbaum 1997). These included the following:

- School-based learning: Schools selected as partnership schools created career majors for students for the 11th and 12th grades emphasizing both academic skills and industry recognized skill certificates.
- Work-Based Learning: Students were to take part in work experience and training activities that provided progressively more advanced training opportunities.
- Connecting Activities: The School-to-Work Opportunities Act called for the development of activities, such as employer recruitment or work-based learning placement, that schools or other agencies would have to learn how to perform.

A number of scholars have pointed to the lack of systematic employer connections between Thai high schools, vocational or otherwise, and employers (Beach, Schwille, and Wheeler 1992; Myers and Chalongphob 1991a). These reports call for more extensive employer involvement based on evidence from the German and Japanese cases. However, more recent evidence, particularly the experience of the US and other European countries studied as part of a large scale effort by the OECD allow a more extensive list of suggestions.

- High School Reform: High schools around the world are under attack. Privatization reforms and a decade of school reform and decentralization have shined the spotlight on a number of critical changes to make at the high school level to ensure that students graduate with high skills. These include structural changes, such as an emphasis on small schools; as well as a change in administration that gives teams of teachers more say in the decisions affecting their students. It also involves greater connections to employers and communities, as ways to successfully change teaching, improve administration, and connect the desired outcomes of high school with the needs from the labor market (Kemple 1997; Newmann and Associates 1996). Many of these changes are incorporated in school-to-work systems (Steinberg 1997).

- Equal Access: Both academic and vocational students should get the same benefits. All students eventually make it into the labor market and need to have both the technical as well as the academic and soft skills to succeed. Simply because vocational graduates are not likely to make it to academic higher education does not mean that they should not get the advanced math or English language skills needed for college entrance. Similarly, upper secondary school graduates should have access to vocational training, specifically broad exposure to career areas. There are number of models emerging in the U.S. about how this can happen at the school level, they include vocationalizing academic education programs and providing greater academic focus for vocational education programs (Olson 1997).

- Employer Involvement: All employer involvement is not equal. Without a doubt, a high school experience without connection to an employer for both students and teachers is not tenable in the 21st century. However, high schools need to go beyond the traditional level of involvement with employers for financing. Employers are an integral part of schools for this century (Alongi 1998; Rosenbaum and Binder 1997). Employers need to be more intimately involved, for example, in program design, curriculum development, and assessment. Involving employers in a wide variety of activities is necessary to produce a new high school.

- Government's Role: School-to-work programs in the United States have received substantial support from the federal and state governments. Through legislation like the School to Work Opportunities Act (1994), the federal government provided the resources and supported the technical assistance necessary to develop many school-to-work programs (Erlichson and Horn 1999; Urquiola and others 1997).

Table 1 (a): NLFS Sample Descriptive Statistics (Weighted)
For Young Males (age 24-35) in 1985, 1995 and 1998

	Males					
	1985(n=2717)		1995(n=7655)		1998(n=6493)	
	Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
1. Outcome Measures						
Monthly Earnings (Includes Bonus)	4299.24	709.95	5952.91	1277.67	5509.47	1050.13
Log of Monthly Earning	8.167	0.174	8.482	0.167	8.438	0.169
2. Education Predictors						
Years of Education	7.803	0.856	8.244	0.825	9.181	0.894
Square of Years of Education	81.762	14.156	84.907	15.336	101.436	17.688
No Schooling	0.017	0.007	0.011	0.003	0.006	0.001
Some Lower Primary	0.015	0.005	0.014	0.005	0.010	0.005
Lower Primary	0.440	0.099	0.218	0.050	0.122	0.040
Some Upper Primary	0.011	0.001	0.008	0.003	0.010	0.003
Upper Primary	0.069	0.017	0.292	0.025	0.301	0.047
Some Lower Secondary	0.009	0.002	0.006	0.001	0.004	0.000
Lower Secondary	0.126	0.021	0.146	0.006	0.160	0.009
Some Upper Secondary	0.004	0.001	0.002	0.001	0.001	0.001
Some Upper Vocational	0.007	0.002	0.001	0.000	0.001	0.001
Upper Secondary	0.038	0.009	0.068	0.011	0.089	0.010
Upper Vocational	0.074	0.030	0.074	0.029	0.073	0.011
Some College	0.093	0.002	0.059	0.015	0.095	0.020
College	0.091	0.023	0.100	0.033	0.121	0.047
Graduate Degree	0.007	0.004	0.002	0.001	0.005	0.004
3. Control Variables						
Years of Experience	15.481	0.856	14.831	0.837	14.030	0.948
Square of Years of Experience	273.218	25.743	248.338	25.113	228.024	25.575
Sanitary Residence	0.125	0.164	0.134	0.176	0.131	0.171
Rural Residence	0.437	0.388	0.523	0.386	0.496	0.389
Urban Residence	0.564	0.387	0.477	0.386	0.504	0.389
North	0.208	0.088	0.174	0.065	0.156	0.063
Northeast	0.139	0.060	0.196	0.070	0.166	0.061
South	0.102	0.024	0.130	0.037	0.114	0.036
Center	0.233	0.093	0.290	0.072	0.325	0.085
Bangkok	0.303	0.267	0.221	0.230	0.239	0.237

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Table 1(b) : NLFS Sample Descriptive Statistics (Weighted)
For Young Females (age 24-35) in 1985, 1995 and 1998

	Females					
	1985(n=2161)		1995(n=4645)		1998(n=6109)	
	Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
1. Outcome Measures						
Monthly Earnings (Includes Bonus)	3682.208	589.165	5296.933	1031.555	5270.458	1058.501
Log of Monthly Earning	7.990	0.170	8.365	0.193	8.363	0.178
2. Education Predictors						
Years of Education	8.575	0.860	9.046	1.058	9.785	0.865
Square of Years of Education	100.558	14.806	105.185	19.414	117.143	17.463
No Schooling	0.039	0.016	0.023	0.014	0.014	0.005
Some Lower Primary	0.022	0.006	0.011	0.000	0.007	0.002
Lower Primary	0.388	0.073	0.239	0.072	0.135	0.039
Some Upper Primary	0.004	0.002	0.003	0.001	0.003	0.001
Upper Primary	0.057	0.013	0.217	0.012	0.259	0.033
Some Lower Secondary	0.003	0.002	0.004	0.001	0.003	0.001
Lower Secondary	0.056	0.016	0.090	0.008	0.137	0.011
Some Upper Secondary	0.002	0.001	0.001	0.001	0.002	0.001
Some Upper Vocational	0.011	0.002	0.004	0.002	0.001	0.000
Upper Secondary	0.026	0.004	0.054	0.005	0.071	0.005
Upper Vocational	0.091	0.038	0.068	0.024	0.055	0.004
Some College	0.143	0.040	0.093	0.015	0.090	0.003
College	0.148	0.053	0.189	0.052	0.214	0.064
Graduate Degree	0.010	0.007	0.004	0.003	0.010	0.006
3. Control Variables						
Years of Experience	14.218	0.834	13.963	1.252	13.279	0.837
Square of Years of Experience	242.936	26.031	232.863	36.906	212.194	22.675
Sanitary Residence	0.135	0.176	0.139	0.180	0.125	0.164
Rural Residence	0.374	0.370	0.478	0.388	0.437	0.388
Urban Residence	0.626	0.370	0.522	0.388	0.563	0.388
North	0.161	0.073	0.171	0.073	0.154	0.079
Northeast	0.150	0.072	0.177	0.061	0.144	0.061
South	0.069	0.012	0.090	0.019	0.080	0.029
Center	0.248	0.124	0.319	0.094	0.302	0.268
Bangkok	0.360	0.285	0.244	0.236	0.319	0.111

Table 2: Expenditure per head by level and school type, 1992

School Type	Current Expenditure Per Head	Capital Expenditure Per Head	Total Expenditure Per Head
Public Academic			
Primary	4962	1957	6919
Lower Sec	5933	3173	9106
Upper Sec	8919	3643	12562
Vocational	7934	7788	15722
Diploma			
Rajamonkol	11082	8925	20007
Teachers College	12943	14870	27813
Baccalurate			
Rajamongkol	13567	9745	23312
Teachers College (2 Years)	5319	8571	13890
Teachers College (4 Years)	10592	7657	18249
Closed University	31443	30888	62331
Open University	3943	2586	6529
Private Academic			
Primary	3892	4821	8713
Lower Secondary	4613	4751	9364
Upper Sec	5993	5817	11810
Private University	5648	4222	9870

*Note. From Creswell (1999)

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Table 3a: Estimates of Household Educational Expenditures (ONEC Study, 1997)

School Type		Total Private Expenditure	Tuition And Fees	Indirect
Kindergarten	Public	3854	344	3489
	Private	11670	4810	6760
Primary	Public	6349	526	5834
	Private	15704	4500	11195
Lower Secondary	Public	10838	1176	9657
	Private	17368	4323	13045
Upper Secondary	Public	17129	2453	14684
	Private	24977	6915	18336
Vocational	Public	15452	3035	12412
	Private	28385	13320	15276
Total	Public	8804	1008	7803
	Private	18908	6723	12348

Table 3b: Average Private Expenditure on Higher Education By Type of Institution (ONEC Survey, 1997)

Type of Institution	Total	Tuition	Expenses
Ministry of Univ Affairs	46657	19170	27330
Rajaphat	28654	8774	19634
RIT	42085	16134	26017
Private	58413	31427	28352
Total	40608	15495	24869

*Note: Tables from Creswell (1999)

Table 4: Average Educational Attainment by Background Characteristics

	Estimate Average Educational Attainment					
	Male			Female		
	1985	1995	1998	1985	1995	1998
n	2717	7655	6493	2161	6645	6109
Total	7.803	8.244	9.181	8.575	9.046	9.786
Sanitary	7.697	8.677	9.414	8.480	9.387	9.821
Rural	6.684	7.282	8.110	7.264	7.722	8.637
Urban	8.929	9.539	10.519	9.589	10.573	10.921
Bangkok	8.842	9.299	10.547	9.301	10.343	10.643
Center	6.925	7.951	8.919	8.076	8.453	9.235
South	8.067	8.332	9.373	10.582	10.599	10.530
North-East	8.521	8.174	8.566	9.317	9.002	9.612
North	6.664	7.408	8.145	6.246	7.531	9.019

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Table 5: Frequency Counts and Percent (Weighted) of Educational Attainment by
By Highest Level Completed in 1985, 1995 and 1998

	Male						Female					
	1985		1995		1998		1985		1995		1998	
Educational Level	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No Schooling	36	1.75%	90	1.06%	63	0.63%	54	3.89%	122	2.27%	93	1.44%
Some Lower Primary	37	1.49%	92	1.37%	57	1.02%	39	2.22%	65	1.13%	48	0.67%
Lower Primary	1002	44.10%	1370	21.85%	716	12.15%	768	38.87%	1223	23.93%	747	13.48%
Some Upper Primary	25	1.06%	49	0.81%	48	1.04%	12	0.39%	24	0.32%	25	0.33%
Upper Primary	215	6.92%	1734	29.20%	1601	30.13%	115	5.72%	1142	21.75%	1278	25.92%
Some Lower Secondary	23	0.92%	61	0.62%	30	0.44%	9	0.31%	32	0.41%	20	0.25%
Lower Secondary	367	12.59%	1210	14.63%	1084	16.04%	135	5.58%	610	8.96%	719	13.71%
Some Upper Secondary	11	0.42%	17	0.17%	15	0.12%	3	0.22%	5	0.08%	12	0.20%
Some Upper Vocational	24	0.66%	12	0.05%	5	0.10%	32	1.12%	13	0.37%	7	0.09%
Upper Secondary	108	3.67%	668	6.85%	755	8.91%	61	2.60%	418	5.37%	455	7.08%
Upper Vocational	244	7.29%	681	7.35%	498	7.29%	224	9.10%	524	6.76%	356	5.53%
Some College	278	9.28%	685	5.88%	709	9.49%	280	14.27%	795	9.34%	677	8.95%
College	327	9.15%	944	9.97%	872	12.09%	409	14.75%	1636	18.90%	1613	21.40%
Graduate Degree	20	0.72%	40	0.19%	40	0.54%	20	0.96%	36	0.39%	59	0.95%
Total	2717	100%	7655	100%	6493	100%	2161	100%	6645	100%	6109	100%

Table 6a(i): Percentage (Weighted) and Percentage Change of Men Educational Attainment by Highest Level Completed for Different Area Residents in 1985, 1995 and 1998

Region	Year		No Schooling	Some Lower Primary	Lower Primary	Some Upper Primary	Upper Primary	Some Lower Secondary	Lower Secondary
Sanitary	1985	Number	8	10	270	6	57	2	81
		%	1.57%	1.88%	43.14%	1.28%	9.17%	0.31%	13.81%
	1995	Number	29	19	412	13	519	17	360
		%	1.15%	0.73%	19.21%	0.92%	24.96%	0.44%	17.32%
		% change	-26.42%	-61.29%	-55.47%	-28.40%	172.12%	40.89%	25.44%
	1998	Number	22	18	206	13	476	10	305
		%	1.22%	0.82%	10.52%	0.42%	26.38%	0.46%	17.28%
		% change	6.27%	13.05%	-45.23%	-53.70%	5.73%	4.73%	-0.26%
Rural	1985	Number	9	10	232	2	21	4	31
		%	2.64%	2.07%	57.29%	0.89%	4.36%	0.77%	9.60%
	1995	Number	30	37	508	20	619	18	261
		%	1.40%	1.94%	27.63%	1.15%	32.38%	0.76%	14.41%
		% change	-46.94%	-6.36%	-51.77%	30.16%	643.14%	-2.33%	50.06%
	1998	Number	15	25	301	21	553	8	241
		%	0.58%	1.61%	17.02%	1.44%	36.04%	0.40%	14.85%
		% change	-58.37%	-17.07%	-38.41%	24.56%	11.28%	-46.79%	3.08%
Urban	1985	Number	19	17	500	17	137	17	255
		%	0.91%	0.81%	31.24%	1.16%	8.82%	1.23%	15.22%
	1995	Number	31	36	450	16	596	28	589
		%	0.50%	0.76%	14.08%	0.24%	26.01%	0.48%	13.93%
		% change	-44.97%	-6.80%	-54.93%	-79.26%	194.94%	-60.72%	-8.49%
	1998	Number	26	14	209	14	572	12	538
		%	0.49%	0.32%	6.27%	0.74%	23.61%	0.49%	17.19%
		% change	-1.33%	-57.66%	-55.45%	207.02%	-9.23%	2.11%	23.41%

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Table 6a(II): Percentage (Weighted) and Percentage Change of Men Educational Attainment by Highest Level Completed for Different Area Residents in 1985, 1995 and 1998

Region	Year		Some Upper Secondary	Some Upper Vocational	Upper Secondary	Upper Vocational	Some College	College	Graduate Degree	Total
Sanitary	1985	Number	1	3	17	36	57	77	2	627
		%	0.03%	0.47%	2.78%	6.11%	9.21%	10.00%	0.23%	100%
	1995	Number	5	2	215	169	150	261	8	2179
		%	0.16%	0.12%	10.04%	8.32%	7.20%	9.16%	0.25%	100%
		% change	372.06%	-74.20%	260.82%	36.18%	-21.83%	-8.17%	8.75%	
	1998	Number	8	1	260	130	163	210	5	1827
		%	0.44%	0.05%	13.82%	7.25%	11.10%	10.07%	0.17%	100%
		% change	171.40%	-59.00%	37.62%	-12.89%	54.17%	9.68%	-34.03%	
Rural	1985	Number	2	3	7	13	42	25	1	402
		%	0.41%	0.41%	2.67%	3.61%	8.98%	6.01%	0.30%	100%
	1995	Number	5	1	101	106	83	118	1	1910
		%	0.25%	0.01%	5.47%	4.08%	4.13%	6.19%	0.02%	100%
		% change	-39.32%	-98.52%	104.62%	12.89%	-53.96%	6.16%	-93.51%	
	1998	Number	0	1	129	86	128	126	2	1636
		%	0.00%	0.16%	7.96%	5.96%	7.03%	6.87%	0.09%	100%
		% change	-100.00%	2555.00%	45.50%	46.13%	69.98%	7.75%	364.77%	
Urban	1985	Number	8	18	84	195	179	225	17	1569
		%	0.53%	0.97%	4.92%	11.29%	9.61%	12.04%	1.27%	100%
	1995	Number	7	9	350	406	452	565	31	3566
		%	0.07%	0.09%	7.69%	11.97%	8.03%	15.74%	0.42%	100%
		% change	-87.72%	-90.74%	56.40%	6.05%	-16.38%	30.80%	-66.91%	
	1998	Number	7	3	366	282	418	536	33	3030
		%	0.17%	0.03%	8.46%	9.07%	12.19%	19.72%	1.26%	100%
		% change	161.44%	-71.59%	10.08%	-24.21%	51.70%	25.27%	199.89%	

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Table 7a (i): Percentage (Weighted) of Men By Highest Level of Education Completed for Different Region Residents in 1985, 1995 and 1998

Region	Year	No Schooling	Some Lower Primary	Lower Primary	Some Upper Primary	Upper Primary	Some Lower Secondary	Lower Secondary	Some Upper Secondary
South	1985	0.00%	1.60%	38.92%	0.29%	6.28%	2.67%	19.45%	0.00%
	1995	1.37%	1.92%	17.62%	0.64%	30.73%	1.22%	15.60%	0.95%
	1998	0.85%	0.61%	10.69%	0.47%	26.78%	1.16%	20.91%	0.06%
Bangkok	1985	0.55%	0.48%	32.65%	1.20%	9.47%	1.53%	15.00%	0.56%
	1995	0.45%	0.58%	14.83%	0.02%	30.20%	0.23%	12.66%	0.00%
	1998	0.39%	0.19%	6.00%	0.53%	25.91%	0.51%	16.30%	0.16%
Central	1985	2.15%	1.39%	52.52%	0.45%	7.43%	0.00%	9.32%	0.25%
	1995	0.50%	1.91%	22.27%	1.53%	30.79%	0.61%	15.00%	0.05%
	1998	0.47%	1.31%	13.28%	1.13%	29.11%	0.45%	17.65%	0.10%
Northeast	1985	0.48%	0.84%	45.39%	0.30%	3.40%	0.24%	9.55%	0.90%
	1995	1.02%	0.39%	25.67%	0.38%	25.52%	0.59%	17.63%	0.02%
	1998	0.13%	1.99%	14.28%	0.81%	38.36%	0.22%	10.12%	0.04%
North	1985	4.81%	1.33%	51.95%	2.48%	5.56%	0.71%	11.52%	0.26%
	1995	2.59%	2.16%	28.69%	1.20%	28.37%	0.75%	12.47%	0.24%
	1998	1.73%	1.09%	18.03%	2.33%	31.99%	0.06%	15.06%	0.25%

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Table 7a (ii): Percentage (Weighted) of Men By Highest Level of Education Completed for Different Region Residents in 1985, 1995 and 1998

Region	Year	Some Upper Secondary	Upper Secondary	Upper Vocational	Some College	College	Graduate Degree	Total
South	1985	1.37%	9.40%	5.59%	6.78%	7.58%	0.06%	100%
	1995	0.03%	8.29%	4.56%	8.20%	8.71%	0.18%	100%
	1998	0.04%	9.14%	5.72%	12.27%	11.10%	0.21%	100%
Bangkok	1985	0.92%	5.01%	11.07%	7.56%	12.24%	1.76%	100%
	1995	0.03%	6.04%	12.43%	5.43%	16.79%	0.32%	100%
	1998	0.00%	6.51%	9.05%	11.03%	21.86%	1.57%	100%
Central	1985	0.45%	2.38%	7.67%	4.41%	9.02%	0.56%	100%
	1995	0.03%	7.63%	6.71%	5.74%	7.09%	0.12%	100%
	1998	0.00%	9.28%	8.83%	10.32%	7.89%	0.20%	100%
Northeast	1985	0.39%	2.51%	4.31%	21.55%	9.83%	0.33%	100%
	1995	0.02%	6.83%	6.91%	4.84%	9.99%	0.14%	100%
	1998	0.48%	10.04%	4.17%	7.53%	11.24%	0.29%	100%
North	1985	0.42%	1.33%	4.55%	9.88%	5.20%	0.00%	100%
	1995	0.17%	5.58%	4.37%	6.28%	6.94%	0.18%	100%
	1998	0.08%	10.47%	5.84%	5.45%	7.49%	0.23%	100%

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Table 7b (i): Percentag *Weighted) of Women By Highest Level of Education Completed*
for Di *ent Region Residents in 1985, 1995 and 1998*

Region	Year	No Schooling	Some Lower Primary	Lower Primary	Some Upper Primary	Upper Primary	Some Lower Secondary	Lower Secondary	Some Upper Secondary
South	1985	0.52%	1.78%	26.75%	0.51%	5.06%	0.16%	2.72%	0.23%
	1995	1.36%	0.73%	15.49%	0.00%	15.27%	1.57%	9.08%	0.07%
	1998	3.57%	1.47%	19.41%	0.60%	23.26%	0.43%	11.69%	0.48%
Bangkok	1985	2.28%	1.65%	31.28%	0.67%	8.69%	0.65%	8.02%	0.08%
	1995	0.03%	1.40%	14.43%	0.04%	23.19%	0.52%	7.73%	0.26%
	1998	0.63%	0.46%	11.72%	0.10%	20.95%	1.16%	10.63%	0.90%
Central	1985	1.05%	2.14%	45.60%	0.21%	7.82%	0.28%	6.68%	0.00%
	1995	2.32%	1.32%	23.79%	0.65%	24.99%	0.25%	12.41%	0.04%
	1998	2.33%	0.52%	15.65%	0.10%	28.43%	0.01%	9.42%	0.16%
Northeast	1985	2.21%	1.01%	40.03%	0.22%	0.66%	0.00%	2.21%	1.15%
	1995	1.15%	0.42%	30.60%	0.25%	19.08%	0.14%	7.91%	0.00%
	1998	1.15%	0.59%	14.39%	0.57%	27.93%	0.28%	15.36%	0.08%
North	1985	15.17%	4.53%	48.32%	0.18%	1.42%	0.00%	2.94%	0.00%
	1995	6.99%	1.34%	35.31%	0.33%	19.80%	0.26%	5.29%	0.00%
	1998	0.44%	0.46%	8.92%	0.11%	25.27%	0.00%	15.45%	0.00%

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Table 7b (ii): Percentage (Weighted) of Women By Highest Level of Education Completed for Different Region Residents in 1985, 1995 and 1998

Region	Year	Some Upper Vocational	Upper Secondary	Upper Vocational	Some College	College	Graduate Degree	Total
South	1985	2.94%	3.70%	6.43%	27.03%	21.84%	0.34%	100%
	1995	0.18%	9.08%	7.32%	12.52%	27.21%	0.02%	100%
	1998	0.07%	7.53%	3.56%	9.34%	17.93%	0.64%	100%
Bangkok	1985	0.64%	2.62%	14.54%	6.71%	19.93%	2.33%	100%
	1995	1.13%	3.13%	10.82%	9.37%	26.90%	1.03%	100%
	1998	0.00%	10.39%	5.30%	15.15%	22.29%	0.30%	100%
Central	1985	0.52%	3.19%	6.92%	13.27%	12.01%	0.32%	100%
	1995	0.19%	7.00%	5.75%	8.34%	12.66%	0.29%	100%
	1998	0.06%	4.98%	3.67%	11.01%	23.13%	0.52%	100%
Northeast	1985	2.74%	3.25%	5.29%	29.08%	12.15%	0.00%	100%
	1995	0.10%	4.88%	4.15%	11.02%	20.21%	0.09%	100%
	1998	0.22%	8.50%	7.08%	8.38%	14.53%	0.53%	100%
North	1985	0.87%	0.75%	4.30%	14.05%	7.35%	0.11%	100%
	1995	0.00%	4.05%	5.27%	7.77%	13.42%	0.18%	100%
	1998	0.00%	5.49%	5.84%	6.74%	29.35%	1.93%	100%

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Table 8: Regression Models
(Repeated for Each Data Set, for men and women, Separately)

	Model 1	Model 2
Experience, Experience-Squared	√	√
Rural or Urban Residence	√	√
Region (North, South, NE, Center, Bangkok (excluded))	√	√
Years of Education, Years of Education Squared	√	
Marriage	√	√
Public/Private Employment (Private excluded)	√	√
Education Dummies		
No Schooling		√
Some Lower Primary		√
Lower Primary		√
Some Upper Primary		√
Upper Primary (Excluded Category)		
Some Lower Secondary		√
Lower Secondary		√
Some Upper Secondary		√
Upper Secondary		√
Some Upper Vocational		√
Upper Vocational		√
Some College (Academic)		√
Post-Secondary Vocational		√
College		√
More than College		√
Occupation		
Professional and Academics		√
Executive Administration		√
Clerk, Typist		√

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Table 9:
Regression of the log of monthly earnings on years of education for young Thai men in 1985, 1995, and 1998 using data from the National Labor Force Survey (Weighted)

	1985 l_earnad	1995 l_earnad	1998 l_earnad
Education			
Years of Education	0.061	-0.012	-0.025
	(0.016)*	(0.018)	(0.013)~
Years of Education Squared[25]	0.002	0.005	0.006
	(0.001)~	(0.001)**	(0.001)**
Experience			
Experience	0.059	0.033	0.045
	(0.010)**	(0.018)~	(0.007)**
Experience Squared	-0.001	-0.001	-0.001
	(0.000)**	(0.000)	(0.000)**
Area of Residence			
Rural	-0.041	-0.038	-0.077
	(0.030)	(0.020)~	(0.018)**
Sanitary District	0.031	0.033	-0.022
	(0.031)	(0.019)~	(0.019)
Region of Residence			
North	-0.219	-0.398	-0.310
	(0.033)**	(0.056)**	(0.028)**
South	-0.131	-0.279	-0.204
	(0.040)**	(0.056)**	(0.030)**
Northeast	-0.262	-0.352	-0.322
	(0.040)**	(0.056)**	(0.028)**
Center	-0.134	-0.201	-0.130
	(0.033)**	(0.051)**	(0.025)**
Marital Status			
Married	0.149	0.093	0.083
	(0.028)**	(0.041)*	(0.017)**
Public/Private Employment			
Public Employment	-0.025	-0.020	-0.124
	(0.030)	(0.044)	(0.022)**
Occupation			
Professional	0.062	0.036	-0.018
	(0.058)	(0.143)	(0.051)
Executive	0.233	0.129	0.074
	(0.062)**	(0.100)	(0.045)~
Clerk	0.159	0.147	0.081
	(0.060)**	(0.152)	(0.048)~
Transportation	0.165	0.105	-0.063
	(0.073)*	(0.156)	(0.046)
Agriculture	-0.549	-0.220	-0.386
	(0.071)**	(0.155)	(0.047)**

[25] In each model I use a general linear hypothesis test to determine if the coefficients on years of education and years of education squared are jointly different from zero. In each case, this allows me to conclude that education does have an impact on earnings in 1985, 1995, and 1998. I conduct the same test for the coefficients on experience and experience squared.

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	1985 l_earnad	1995 l_earnad	1998 l_earnad
Mining	-0.110	0.542	-0.257
	(0.129)	(0.254)*	(0.084)**
Skilled Worker	0.032	0.058	-0.095
	(0.059)	(0.152)	(0.041)*
Service	-0.044	0.029	-0.049
	(0.062)	(0.153)	(0.046)
Constant	6.972	7.921	7.947
	(0.121)**	(0.208)**	(0.086)**
Observations	2717	7655	6493
R-squared	0.53	0.49	0.52
Robust standard errors in parentheses ~ significant at 10% level, * significant at 5% level; ** significant at 1% level			

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Table 10:
Regression of the log of monthly earnings on years of education for young Thai women in 1985, 1995, and 1998 using data from the National Labor Force Survey (Weighted)

	1985 l_earnad	1995 l_earnad	1998 l_earnad
Education			
Years of Education	0.059	-0.003	-0.025
	(0.022)**	(0.013)	(0.013)*
Years of Education Squared[24]	0.001	0.004	0.005
	(0.001)	(0.001)**	(0.001)**
Experience			
Experience	0.059	0.043	0.053
	(0.011)**	(0.009)**	(0.007)**
Experience Squared	-0.001	-0.001	-0.001
	(0.000)**	(0.000)**	(0.000)**
Area of Residence			
Rural	-0.044	-0.091	-0.067
	(0.037)	(0.023)**	(0.020)**
Sanitary District	0.006	-0.017	-0.010
	(0.029)	(0.019)	(0.019)
Region of Residence			
North	-0.169	-0.384	-0.353
	(0.046)**	(0.043)**	(0.030)**
South	-0.176	-0.276	-0.300
	(0.039)**	(0.042)**	(0.029)**
Northeast	-0.229	-0.339	-0.328
	(0.035)**	(0.040)**	(0.031)**
Center	-0.109	-0.109	-0.130
	(0.034)**	(0.036)**	(0.025)**
Marital Status			
Married	0.112	0.006	0.033
	(0.023)**	(0.023)	(0.018)~
Public/Private Employment			
Public Employment	0.053	-0.021	-0.095
	(0.043)	(0.036)	(0.027)**
Occupation			
Professional	0.205	0.139	0.076
	(0.064)**	(0.094)	(0.049)
Executive	0.285	0.087	0.191
	(0.080)**	(0.057)	(0.040)**
Clerk	0.206	0.080	0.059
	(0.066)**	(0.095)	(0.039)
Transportation	0.290	0.183	-0.092
	(0.093)**	(0.113)~	(0.091)
Agriculture	-0.338	-0.240	-0.262
	(0.079)**	(0.089)**	(0.045)**
Mining	-0.098	-0.185	-0.131
	(0.208)	(0.085)*	(0.041)**
Skilled Worker	0.133	-0.026	-0.035
	(0.069)~	(0.088)	(0.038)

[24] In each model I use a general linear hypothesis test to determine if the coefficients on years of education and years of education squared are jointly different from zero. In each case, this allows me to conclude that education does have an impact on earnings in 1985, 1995, and 1998. I conduct the same test for the coefficients on experience and experience squared.

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	1985 l_earnad	1995 l_earnad	1998 l_earnad
Service	-0.254	-0.200	-0.186
	(0.072)**	(0.096)*	(0.042)**
Constant	6.811	7.799	7.795
	(0.146)**	(0.116)**	(0.087)**
Observations	2158	6644	6109
R-squared	0.65	0.60	0.58
Robust standard errors in parentheses ~ significant at 10% level, * significant at 5% level; ** significant at 1% level			

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Table 11:
Regression of the log of monthly earnings on a vector of education dummies for young Thai men in 1985, 1995, and 1998 using data from the National Labor Force Survey (Weighted)

	1985 l_earnad	1995 l_earnad	1998 l_earnad
Experience			
Experience[27]	0.059	0.028	0.047
	(0.010)**	(0.017)~	(0.008)**
Experience Squared	-0.001	-0.001	-0.001
	(0.000)**	(0.000)	(0.000)**
Area of Residence			
Rural	-0.031	-0.040	-0.083
	(0.030)	(0.019)*	(0.018)**
Sanitary District	0.039	0.035	-0.021
	(0.031)	(0.019)~	(0.019)
Region of Residence			
North	-0.222	-0.386	-0.304
	(0.033)**	(0.052)**	(0.028)**
South	-0.134	-0.263	-0.199
	(0.040)**	(0.052)**	(0.030)**
Northeast	-0.263	-0.347	-0.321
	(0.041)**	(0.052)**	(0.028)**
Center	-0.142	-0.194	-0.127
	(0.033)**	(0.048)**	(0.025)**
Marital Status			
Married	0.152	0.090	0.080
	(0.028)**	(0.039)*	(0.017)**
Public Employment	-0.024	-0.022	-0.121
	(0.030)	(0.043)	(0.022)**
Education			
No School	-0.392	-0.339	-0.375
	(0.113)**	(0.073)**	(0.078)**
Some Lower Primary	-0.385	-0.165	-0.031
	(0.075)**	(0.068)*	(0.057)
Lower Primary	-0.190	-0.041	0.008
	(0.042)**	(0.039)	(0.030)
Some Upper Primary	-0.075	-0.020	0.115
	(0.102)	(0.056)	(0.087)
Some Lower Secondary	0.062	0.119	0.131
	(0.089)	(0.064)~	(0.213)
Lower Secondary	0.195	0.210	0.156
	(0.050)**	(0.042)**	(0.022)**
Some Upper Secondary	0.191	-0.081	0.217
	(0.087)*	(0.108)	(0.182)
Some Upper Vocational	0.609	0.065	0.591
	(0.087)**	(0.224)	(0.093)**
Upper Secondary	0.450	0.382	0.395
	(0.065)**	(0.060)**	(0.031)**
Upper Vocational	0.611	0.580	0.460

[27] In each model I use a general linear hypothesis test to determine if the coefficients on the vector of education dummies are jointly different from zero. In each case, this allows me to conclude that education does have an impact on earnings in 1985, 1995, and 1998. I conduct the same test for the coefficients on experience and experience squared.

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	1985	1995	1998
	l_earnad	l_earnad	l_earnad
	(0.056)**	(0.078)**	(0.035)**
Post Secondary Vocational	0.748	0.730	0.686
	(0.064)**	(0.076)**	(0.042)**
Post Secondary Academic	0.629	0.648	0.640
	(0.069)**	(0.148)**	(0.073)**
College	0.897	1.130	0.967
	(0.072)**	(0.136)**	(0.049)**
Graduate School	1.215	1.517	1.347
	(0.189)**	(0.138)**	(0.123)**
Occupation			
Professional	0.083	-0.001	-0.027
	(0.061)	(0.142)	(0.050)
Executive	0.220	0.124	0.068
	(0.063)**	(0.101)	(0.044)
Clerk	0.130	0.159	0.087
	(0.060)*	(0.145)	(0.049)~
Transportation	0.166	0.118	-0.061
	(0.073)*	(0.152)	(0.046)
Agriculture	-0.547	-0.209	-0.393
	(0.071)**	(0.151)	(0.046)**
Mining	-0.110	0.547	-0.267
	(0.124)	(0.248)*	(0.087)**
Skilled Worker	0.027	0.066	-0.094
	(0.059)	(0.148)	(0.040)*
Service	-0.024	0.055	-0.037
	(0.063)	(0.145)	(0.047)
Constant	7.426	8.081	8.002
	(0.106)**	(0.208)**	(0.070)**
Observations	2717	7655	6493
R-squared	0.54	0.50	0.52

Robust standard errors in parentheses
~ significant at 10% level, * significant at 5% level; ** significant at 1% level

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Table 12:
Regression of the log of monthly earnings on a vector of education dummies for young Thai women in 1985, 1995, and 1998 using data from the National Labor Force Survey (Weighted)

	1985 l_earnad	1995 l_earnad	1998 l_earnad
Experience			
Experience	0.059	0.039	0.054
	(0.011)**	(0.008)**	(0.007)**
Experience Squared[28]	-0.001	-0.001	-0.002
	(0.000)**	(0.000)**	(0.000)**
Area of Residence			
Rural	-0.033	-0.089	-0.065
	(0.037)	(0.023)**	(0.020)**
Sanitary District	0.012	-0.014	-0.006
	(0.029)	(0.019)	(0.019)
Region of Residence			
North	-0.170	-0.378	-0.352
	(0.047)**	(0.041)**	(0.030)**
South	-0.174	-0.261	-0.296
	(0.039)**	(0.040)**	(0.029)**
Northeast	-0.224	-0.329	-0.326
	(0.036)**	(0.039)**	(0.031)**
Center	-0.105	-0.100	-0.132
	(0.034)**	(0.034)**	(0.025)**
Marital Status			
Married	0.116	0.011	0.031
	(0.023)**	(0.022)	(0.018)~
Public/Private Employment			
Public Employment	0.041	-0.031	-0.099
	(0.041)	(0.037)	(0.027)**
Education			
No School	-0.396	-0.128	-0.050
	(0.126)**	(0.066)~	(0.064)
Some Lower Primary	-0.352	-0.176	-0.045
	(0.089)**	(0.053)**	(0.053)
Lower Primary	-0.201	-0.047	0.022
	(0.063)**	(0.034)	(0.031)
Some Upper Primary	-0.095	-0.070	-0.035
	(0.161)	(0.084)	(0.079)
Some Lower Secondary	0.244	-0.196	0.053
	(0.164)	(0.139)	(0.101)
Lower Secondary	0.243	0.216	0.207
	(0.078)**	(0.038)**	(0.031)**
Some Upper Secondary	0.784	0.230	0.186
	(0.108)**	(0.080)**	(0.081)*
Some Upper Vocational	0.514	0.237	0.277
	(0.100)**	(0.174)	(0.127)*
Upper Secondary	0.246	0.358	0.378
	(0.119)*	(0.049)**	(0.042)**

[28] In each model I use a general linear hypothesis test to determine if the coefficients on the vector of education dummies are jointly different from zero. In each case, this allows me to conclude that education does have an impact on earnings in 1985, 1995, and 1998. I conduct the same test for the coefficients on experience and experience squared.

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	1985 l_earnad	1995 l_earnad	1998 l_earnad
Upper Vocational	0.496	0.609	0.486
	(0.094)**	(0.064)**	(0.043)**
Post Secondary Vocational	0.709	0.642	0.684
	(0.100)**	(0.061)**	(0.054)**
Post Secondary Academic	0.658	0.541	0.675
	(0.102)**	(0.067)**	(0.068)**
College	0.919	0.947	0.896
	(0.101)**	(0.059)**	(0.056)**
Graduate School	1.039	1.465	1.440
	(0.126)**	(0.201)**	(0.110)**
Occupation			
Professional	0.183	0.166	0.087
	(0.068)**	(0.078)*	(0.049)~
Executive	0.272	0.066	0.198
	(0.078)**	(0.056)	(0.042)**
Clerk	0.203	0.095	0.055
	(0.069)**	(0.082)	(0.039)
Transportation	0.325	0.207	-0.074
	(0.089)**	(0.101)*	(0.088)
Agriculture	-0.324	-0.219	-0.252
	(0.077)**	(0.076)**	(0.046)**
Mining	-0.065	-0.140	-0.161
	(0.208)	(0.082)~	(0.045)**
Skilled Worker	0.145	0.000	-0.026
	(0.070)*	(0.072)	(0.039)
Service	-0.234	-0.166	-0.174
	(0.073)**	(0.081)*	(0.042)**
Constant	7.247	7.935	7.809
	(0.115)**	(0.102)**	(0.069)**
Observations	2158	6644	6109
R-squared	0.66	0.61	0.58

Robust standard errors in parentheses
~ significant at 10% level, * significant at 5% level; ** significant at 1% level

Table 13: Estimated Percentage Difference in Log Monthly Earnings Between Upper Primary Graduates and Particular Education Credentials

	1985		1995		1998	
	Men	Women	Men	Women	Men	Women
Upper Secondary	56.8%	27.9%	46.5%	43.0%	48.4%	45.9%
Upper Vocational	84.3%	64.3%	78.6%	83.8%	58.5%	62.7%
Post-Secondary Vocational	111.3%	103.2%	107.6%	90.1%	98.5%	98.1%
Post-Secondary Academic	87.6%	93.1%	91.2%	71.8%	89.6%	96.3%

* Note, Predicted percentage differences computed based on regression of log of monthly earning on a vector of education dummies, experience, area of residence, region of residence, marital status, public/private employment, and occupation. Male and female estimates were computed separately.

Table 14: Social Rates of Return to Secondary and Post-Secondary Education In Thailand in 1985, 1995 and 1998

	1985		1995		1998	
	Men	Women	Men	Women	Men	Women
Upper Secondary	20.2%	14.0%	22.9%	22.9%	25.4%	26.5%
Upper Vocational	20.2%	16.2%	25.9%	23.2%	25.9%	23.2%
(Using Upper Secondary or Vocational as Proper Opportunity Costs)						
Post Secondary Academic	15.8%	14.8%	22.9%	18.6%	25.3%	22.0%
Post Secondary Vocational	27.2%	18.3%	25.1%	17.7%	21.5%	20.7%

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IX. ENDNOTES

[i] This summary of changes in the educational system draws heavily on (Knodel and Malinee 1989).

[ii] Secondary education was gradually transformed into "comprehensive secondary education," thereby incorporating more vocational and professional training at the secondary level. At the same time the government eliminated central school leaving exams, freeing individual schools to create innovative local programs of study. However, local schools did not have the resources to fashion new programs, and in any case parents and students generally look towards secondary school as preparation for college Orapin, Sopchokchai. *Three More Years in School: Parents' Opinions and Problems*. : The Thailand Development Research Institute, 1991. 1991 Year End Conference on "Educational Options for the Future of Thailand". Sirilaksana, Chutikul Khoman. *The Education Sector in Thailand: Problems, Policy Dilemmas, and the Role of the Government*. Bangkok: Faculty of Economics, Thammasat University, 1988. Discussion Paper Series, 95..

[iii] In 1989, 24.4% of university students were enrolled in private universities. In comparison, in 1983 only 12.7% were enrolled in private schools [Myers, 1991 #170].

[iv] These figures about enrollment come from Education Statistics in Brief, a Thai government publication.

[v] This dramatic increase has been driven by the decision to accommodate secondary school students in primary schools, through the expanded schools program.

[vi] This point about the emphasis in then curriculum is an important one and one that a number of authors have draw attention to, at least in passing. Sirilaksana, Chutikul Khoman. *The Education Sector in Thailand: Problems, Policy Dilemmas, and the Role of the Government*. Bangkok: Faculty of Economics, Thammasat University, 1988. Discussion Paper Series, 95. The best evidence we have comes from Orapin's interviews with parents as part of a study for TDRI of lower secondary schooling in the early 1990s. As part of this study she concludes that parents generally see secondary schooling as preparation for college and a professional career Orapin, Sopchokchai. *Three More Years in School: Parents' Opinions and Problems*. : The Thailand Development Research Institute, 1991. 1991 Year End Conference on "Educational Options for the Future of Thailand"..

[vii] Data provided by Johanson and Werawat contradict this statement. They conclude that upper vocational completers have high transition rates to post-secondary vocational education. It is also possible, as they point out in their study, that enrollments at the post-secondary level increased because of the decline in economic activity during the crisis Johanson, Richard, and Werawat Wanasiri. *Private Secondary Vocational Education in Thailand- Draft*. : The World Bank, 1999. Office of the National Education Commission and the World Bank: Study on Secondary and Vocational Education in Thailand: Moving Towards 12 Years for All..

[viii] Peter Moock comments on this in his report in 1996, speculating that a comparison between the two is difficult, because of the high transition rates between upper secondary school and college. (Moock, 1996)

[ix] Thailand is primarily an agricultural economy. Many of the farmers migrate to the cities in the dry season to find work. See Chalongphob and Yongyuth for a survey of the role of seasonal migration in the labor force Chalongphob, Sussangkarn , and Chalamwong Yongyuth. "Thailand: Development Strategies and Their Impacts on Labour Markets and Migration." In *Development Strategy, Employment, and Migration*, ed. D. O'Connor and L. Farsakh. Paris: OECD, 1996..

[x] Individuals who work 30 or more hours a week are considered full-time workers.

[xi] The complication with this strategy is that costs were measured in 1997, when both private and government costs would have changed between 1985 and 1998. If earlier cost data are available, they should be used.

[xii] The proportion of students enrolled in private schooling by level of education was taken from Johanson and Werewat [Johanson, 1999 #388]. Again, this strategy assumes that the proportion of students in private institutions has was the same in 1985, 1995, and 1998.

[xiii] On average, the educational attainment of women is higher than men. This is not surprising given scholars of Thailand have pointed out the relative equality in access to basic education Watson, Keith. *Educational Development in Thailand*. Singapore: Heinemann Asia, 1980.. However, this topic has not been studied in depth as far as I know.

[xiv] All regression models are fitted by methods that generate White's standard errors, which account for potential failures of the assumption of residual heteroscedasticity.

[xv] The measure of monthly earnings is constructed from data on wages collected as part of the NLFS. Individuals were asked to describe the type of wages they received (hourly, daily, weekly, or monthly). Subsequently, each individual was asked "How much they received, per hour, per day, per week, or per month?" Each individual was also asked about their bonus or average overtime received each month.

[xvi] The government classifies households into one of three types (municipal, sanitary-district, or rural). There is no consensus about how to treat residents of sanitary districts. Some authors have claimed that sanitary districts are more like urban areas and should be treated this way Medhi, Krongkaew. "Poverty and Income Distribution." In *The Thai Economy in Transition*, ed. Peter G. Warr. Australia: Cambridge University Press, 1993. Other researchers treat sanitary districts as a separate unit Kakwani, Nanak, and J. Pothong. *Impact of the Economic Crisis on the Standard of Living in Thailand*. Bangkok: Development Evaluation Division, National Economic and Social Development Board, 1999. Asian Development Bank Project.. I follow Kakwani and Pothong in treating sanitary districts as a separate unit for analysis. For the rest of the paper I use the term "area" to refer to this division of households into urban, sanitary district, and rural.

[xvii] This analysis uses potential work experience because the data set does not have an adequate measure of actual work experience. Potential work experience is defined in the following way (Age - 6 - years of education).

[xviii] Note, these predicted monthly earnings are computed using the regression coefficients in Table X and X. To predict log monthly earnings for a particular sub sample I set the individual coefficients to their means (adjusted using sampling weights). For mean values of the coefficients see Table 1, Sample Characteristics. Note, the value of the experience squared and the years of education squared coefficients are computed by squaring the mean value of the years of experience or years of education, not the mean value in Table 1.

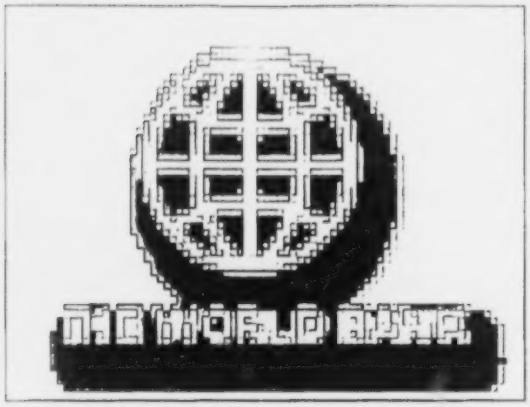
[xix] Frankenberg, Elizabeth, Duncan Thomas, and Kathleen Beegle. *The Real Costs of Indonesia's Economic Crisis: Preliminary Findings from the Indonesia Family Life Surveys*. Santa Monica, CA: RAND, 1999. Labor and Population Program, Working Paper Series, #99-04., Table 3.1.

[xx] This logic owes something to the discussion by W. Norton Grubb about the sub-baccalaureate labor market Grubb, W. Norton, Torry Dickinson, Lorraine Giordano, and Gail Kaplan. *Betwixt and Between: Education, Skills, and Employment in the Sub-Baccalaureate Labor Markets*. Berkeley, CA: National Center for Research in Vocational Education, 1993..

[xxi] Office of the National Education Commission. *National Education Act of B.E. 2542 (1999)*. Bangkok, Thailand: Office of the Prime Minister, Thailand, 1999., Section 10

[xxii] Murnane, Richard, and Frank Levy. *Teaching the New Basic Skills*. New York: The Free Press, 1996.

[xxiii] Murnane, Richard, and Frank Levy. *Teaching the New Basic Skills*. New York: The Free Press, 1996.



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